Scientific Instruments

1) Altimeter:

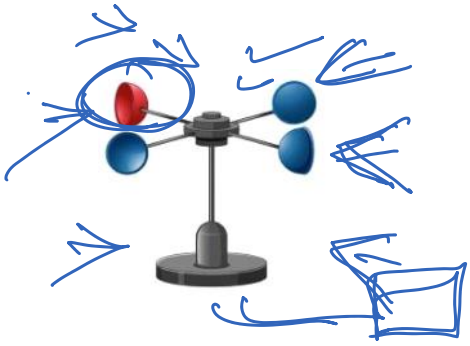
It is also known as altitude meter. It is used to measure the altitude or distance of an object above a fixed level such as the earth' surface, water surface, etc. For example, it can measure the altitude of an airplane, spacecraft, etc., from the earth or sea surface.

2) Ammeter:

This scientific instrument is used to measure the electric current. The electric current is a flow of electrons that is measured in ampere. So, it is the instrument that measures the current in ampere, so it is called an ammeter or ampere meter.

3) Anemometer:

It is used to measure the speed, direction and pressure of wind in the atmosphere, in wind tunnels, houses, and more. It is provided with a spinning wheel. The stronger the wind blows, the faster the wheel rotates. The instrument counts the number of rotations and based on the count of rotations it calculates the wind speed. It is widely used by meteorologists to study weather patterns, and by physicists to study the movement of air.



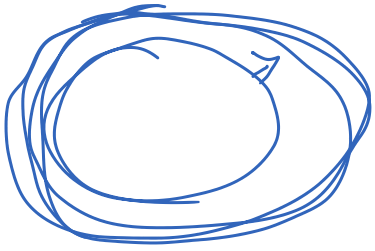
4) Audiometer:

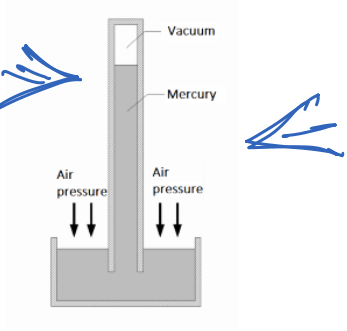
It is designed to measure the intensity of sound while evaluating hearing acuity. It is widely used by audiologists and other trained medical practitioners to check the hearing threshold of a person and to identify and quantify the degree of

It is designed to measure the intensity of sound while evaluating hearing acuity. It is widely used by audiologists and other trained medical practitioners to check the hearing threshold of a person and to identify and quantify the degree of hearing loss in a person. From the findings and readings obtained using this device, appropriate medical treatment and hearing aid fitting can be prescribed.

5) Barometer:

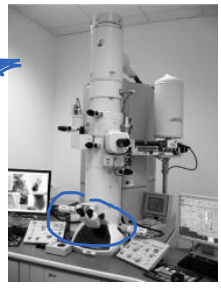
It measures the atmospheric pressure, the pressure exerted by the air on the Earth's surface. Our atmosphere comprises different layers of air wrapped around the Earth. Due to gravitational pull towards Earth, the air presses against everything it touches, this pressure of air is called atmospheric pressure and is measured by a barometer. Atmospheric pressure changes with distance above or below sea level.





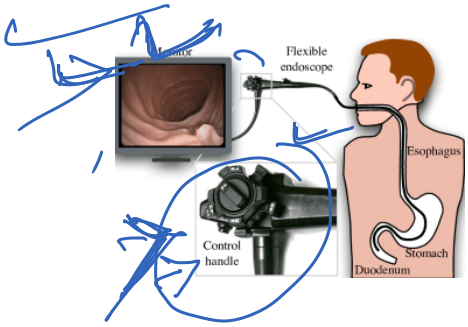
6) Electron microscope:

It is used to see extremely small objects such as atoms, bacteria or viruses. It uses electrons to create an image of an object or specimen under observation. Its magnification or resolving power is very high as compared to ordinary microscopes. The electron microscopes can magnify an object up to two million times as compared to a light microscope which can magnify only up to 2000 times. The first electron microscope was invented in 1931 by German engineers Max Knoll and Ernst Ruska.



7) Endoscope:

This instrument is used to examine or view the internal organs inside our body without performing surgery. It is a long, thin tube which is flexible enough to move inside our body. It has a light and a camera that allows us to see the inside of our body on a television screen. It is used to examine organs such as throat, oesophagus, stomach, etc.

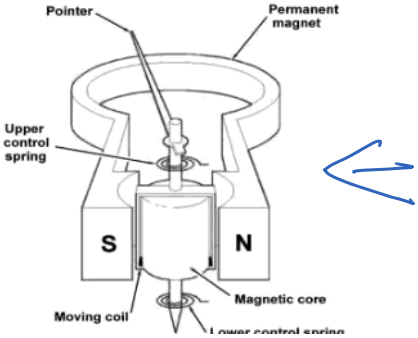


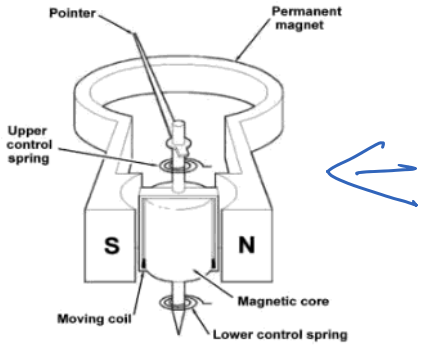
) Fathometer:

It is a scientific instrument that is used to measure the depth of water, e.g. ocean depth. It is mostly used by ships to find out the depth of water below the ships. Fathometer is an echo-sounding instrument that uses sound waves to calculate the depth of water. It sends the sound waves to the ocean's floor then calculates the time taken by the sound waves to reach the ocean's floor and return back to the source. The main components of a fathometer include a transmitting and receiving oscillators, recorder unit and a power unit. The first practical fathometer was invented by Herbert Grove Dorsey, an American engineer.

9) Galvanometer:

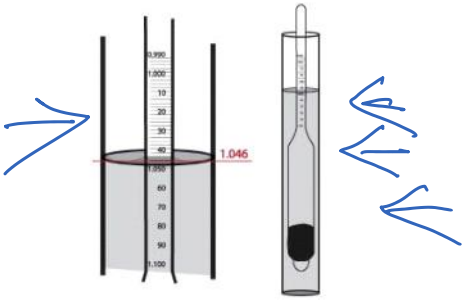
It is used to detect or measure the presence of small electric current and voltage. It also detects the direction of the current flowing in the circuit and the null point of the circuit. The null point refers to the time when no current is flowing in the circuit. It also tells about the voltage between any two points of the circuit. The first galvanometer was invented by Johann Schweigger in 1820.





10) Hydrometer:

It is a scientific instrument that is designed to measure the relative density or specific gravity of different types of liquids. This instrument is a sealed glass tube which has a wider bottom portion that contains a heavy ballast such as lead or mercury for stability or to make the hydrometer float upright. The narrow upper stem is calibrated to take the measurements.



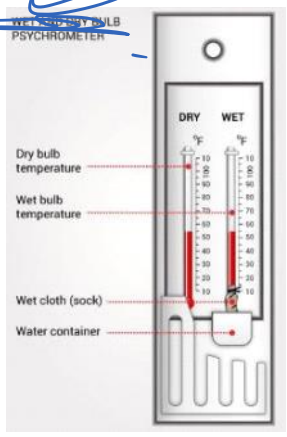
11) Hydrophone:

This scientific instrument is an underwater device designed to detect, monitor and record underwater sounds coming from different directions. Just like a microphone receives sounds in the air, it receives acoustic signals in the water. Sound is like a pressure wave that can move particles physically. So, the sound produces a mechanical force when it touches a hydrophone. The hydrophone converts a sound wave or acoustic energy into electrical energy based on the changes detected in the pressure in the surrounding environment. It just listens to the sounds in the sea but does not transmit any sound.

12) Hygrometer:

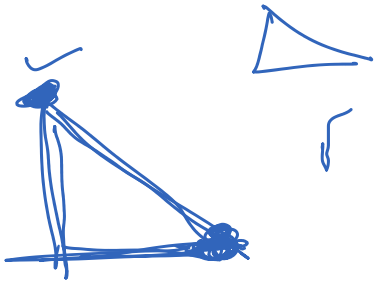
It is used as a weather instrument as it is designed to measure the humidity in the air or atmosphere. Humidity is the amount of water vapour present in the atmosphere. The uncomfortable sticky feeling in summers is due to the high humidity in the air. Different types of hygrometers have been developed over the centuries. The most commonly used hygrometer is called a psychrometer. It

atmosphere. The uncomfortable sticky feeling in summers is due to the high humidity in the air. Different types of hygrometers have been developed over the centuries. The most commonly used hygrometer is called a psychrometer. It is provided with two mercury thermometers one has a dry bulb and another one with a wet bulb. Horace Benedict de Saussure had designed one of the first hydrometers in 1783.



13) Hypsometer:

It is used to measure the height or elevation of an object such as a building, tree, etc. A hypsometer can be of different types based on the principles it uses to measure the height. Such as scale hypsometer that uses trigonometry and pressure hypsometer that uses the concept of atmospheric pressure. It is most often used for survey and by the construction industries to measure the height of buildings and by arborists to measure the heights of trees.

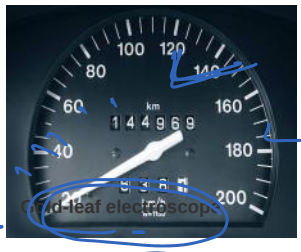


14) Machmeter:

It is a scientific instrument that measures the ratio of the speed of the aircraft to the speed of the sound, this ratio is called Mach Number (M). When M is equal to one, the speed of the aircraft is equal to the speed of the sound. This instrument is very important for the aircraft that fly at high speed. The pilot can easily understand whether he is flying within the safe speed limits or not.

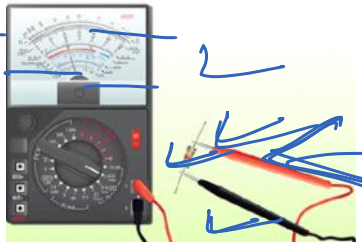
5) Odometer:

It is a scientific instrument that indicates the distance travelled by a vehicle such as a car, motorcycle, etc. It can a mechanical or electronic device or a combination of both, e.g., electromechanical odometer. It is generally located in the dashboard of a vehicle.



16) Ohmmeter:

It is used to measure or calculate the electrical resistance of a circuit. The unit of resistance is ohm, so it is measured in ohm. The electrical resistance of a circuit or conductor indicates how much it resists the flow of current through it.



17) Cathetometer:

It is a scientific instrument which is used to measure the minute differences in the levels of surfaces of liquids with great accuracy. E.g., the distance between the levels of the mercury in the tube of a barometer and in any other container such as a cistern, glass tube, etc.

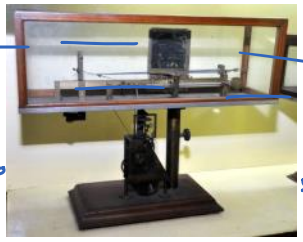
18) Colorimeter:

Calorimeter is used to measure the absorbency of light waves. It is a light-sensitive device that is used for measuring the absorbance of light passing through a liquid sample. Absorbance is the amount of light absorbed by a solution containing a solute.

through a liquid sample. Absorbance is the amount of light absorbed by a solution containing a solute.

19) Crescograph:

It is a device that is used to measure the growth in plants. It was invented by Sir Jagadish Chandra Bose at the beginning of the 20th century. This main components of this instrument include a smoked glass plate and clockwise gears. The plate is calibrated at regular distance intervals to measure the growth or movement of the tip or roots of a plant under observation at a magnification of up to 10,000 times. And, the role of clockwise gears is to measure the influence on growth under different circumstances, under varying stimuli such as temperature, gases, chemicals, electricity.



20) Cryometer:

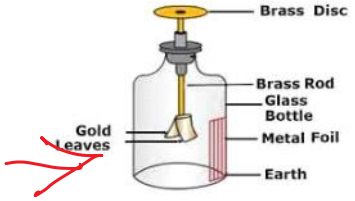
It is a type of thermometer that is used to measure very low temperatures of objects. There are lots of devices that can be used as Cryometers. These devices are mostly used to measure low temperature in space. For example:

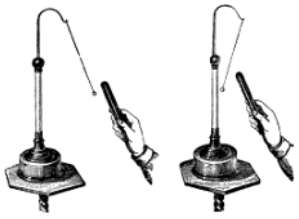
21) Dilatometer:

It is a scientific instrument that is developed to measure the changes in the volume or length of a material that occurs as a result of a change in temperature. These materials can be ceramics, glasses, polymers, and metals. These changes in the dimension of material are measured on the basis of dilatometry. There can be many reasons for volume changes apart from temperature such as absorption of fluids, chemical reactions, or mechanical stress such as pressure on a solid object.

22) Electroscope:

It is an instrument used to detect the presence of an electric charge on a body. The first electroscope was developed by a British physician William Gilbert in 1600. It had a pivoted needle a
nd was called versorium.





Pith-ball electroscope:

23) Ondometer:

It is used to measure the wavelength and nature of the electromagnetic radiations or waves. It is sometimes also called wavemeter. The electromagnetic radiation is comprised of many radiations of different wavelengths known as the electromagnetic spectrum.

24) Optometer:

It is a device that tracks the path travelled by the light after it enters the eye. It is called eye refraction. If the path travelled by light is not normal then it is known as a refractive error that may be corrected using eyeglasses or contact lenses.

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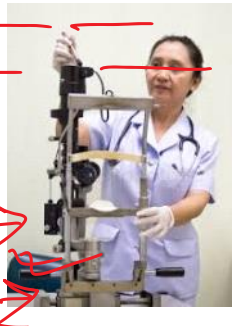
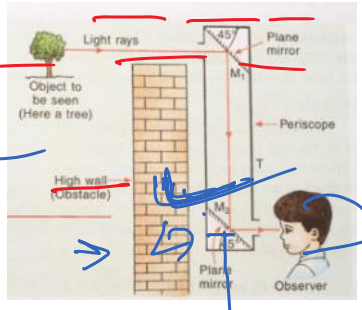


25) Otoscope:

It is a specialized hand-held instrument used by physicians to examine the ear more specifically the ear canal and eardrum. Its name is derived from two words "Oto" means Ear and "scope" means to view. However, it can also be used to examine the nose and throat passages in the body.

26) Periscope:

It is a device that is designed to observe over, or around an obstacle that prevents the direct line of sight. It works on the principle of laws of reflection of light. So, an object that is placed in the line of sight reflects the light towards the eyepiece making the target visible in the periscope.



27) Phonograph:

It is a device that is developed to reproduce the sound recorded on a grooved disc. It is provided with a stylus or needle that vibrates while following a spiral groove on the revolving disc to reproduce sound. It is also known as a gramophone or disc player or a record player.

28) Polygraph:

It is sometimes known as a lie-detector device. It is typically used to test the physiological responses of a person while replying to a set of yes or no questions related to a crime, incident, and any other sensitive purpose.

29) Pyrometer:

It is a scientific device that is designed to measure relatively high temperature such as in furnaces without touching and where we cannot use ordinary thermometers. It is based on the fact that every hot object emits heat or thermal radiations. So, most of the pyrometers work by measuring heat radiations emitted from the objects.

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31) Rain Gauge:

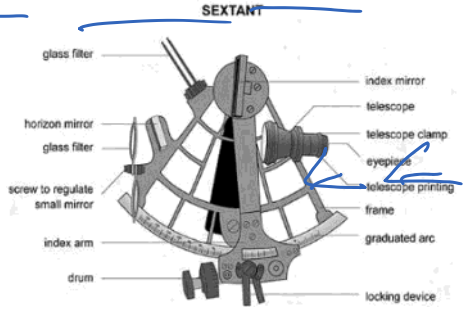
It is a simple scientific instrument that is used to measure the amount of rain during a particular interval of time per unit area. It is also known as ombrometer.

32) Refractometer:

It is a scientific instrument that is used to measure the refractive index of a liquid or solid substance. It measures how much the light bents or refracted when it enters into a substance from the air. It is based on the fact that light travels at different velocities in different mediums such as solids, liquids, gases, etc.

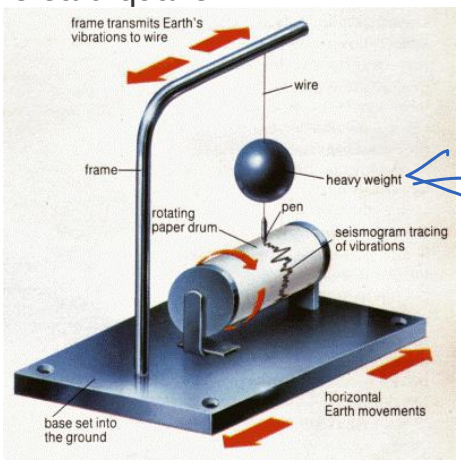
33) Sextant:

It is used to find out the angle between the horizon and a celestial body such as Stars, Moon, Sun, etc. It is a navigation instrument that helps determine longitude and latitude, more specifically the altitude of the sun, stars above the horizon. So, it helps a navigator to find his position on the earth while travelling in a ship.



34) Seismograph:

It is a scientific instrument developed to detect, measure or record earthquakes. It is capable of recording the motion of the ground during an earthquake. Sometimes, it is also called a seismometer. During an earthquake, seismic waves are produced. These propagating vibrations travel outward to all directions carrying energy from the origin of an earthquake. The record of vibrations produced by a seismograph on a screen or a paper is called a seismogram. Using a seismograph, you can find out, the magnitude, depth and location of the earthquake.

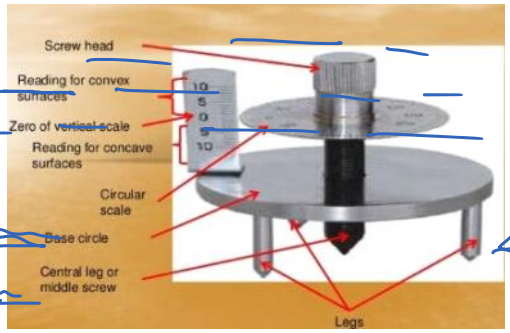


35) Speedometer:

It is a device installed in the vehicles to measure their speed while moving on the roads. It allows drivers to maintain a sensible and safe pace. It indicates the speed in miles per hour, kilometres per hour or both. Josip Belusic invented the first speedometer in 1888.

36) Spherometer:

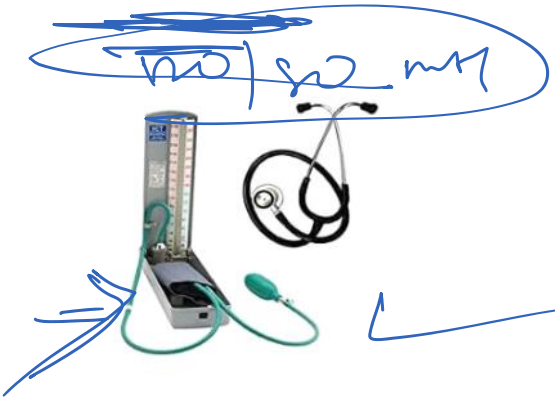
A Spherometer is a scientific device that is developed to measure the radius of curvature of spherical surfaces with great precision. The radius of curvature of a curved mirror is the radius of the sphere that was used to make the curved mirror.



37) Sphygmomanometer:

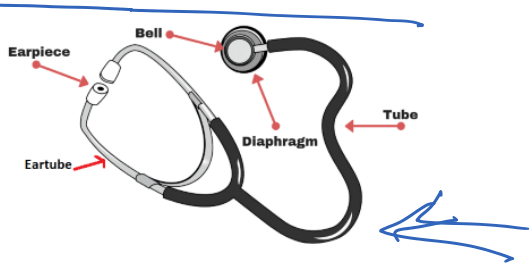
It is used to measure blood pressure in humans.

he blood pressure reading obtained by using a sphygmomanometer is composed of two numbers that indicate systolic and diastolic pressures. E.g. 120/80 mm Hg



38) Stethoscope:

It is a scientific instrument that is used by doctors to detect or listen to the sounds produced in the body such as heartbeats and sounds produced in lungs, intestinal tract including the sound of blood flow in the peripheral vessels and the heart sounds of the foetus in the womb of pregnant women. It is used for the proper diagnosis of a patient's condition or illness. It is a binaural device, so it is used with both the ears.



39) Tachometer:

It is used to measure the rotation speed of a rotating object such as

crankshaft of an engine. It measures revolutions per minute performed by the object. A tachometer is also known as a revolution counter. In general, it comprises a dial and a needle to display the readings related to safe and dangerous limits.

40) Telemeter:

It is used to measure the distance between two objects, which may be moving or only one of them is moving and another one is stationary.

41) Thermometer:

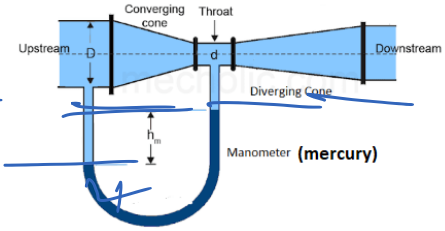
It is a scientific device that is used to measure temperature. It can be of different types as it can be used to measure the temperature of a wide range of substances such as food, liquids, gases, air and human body temperature. The commonly used measurement units for the measurement of temperature include Kelvin, Fahrenheit and Celsius.

42) Tonometer:

Tonometer is used to measure the pressure inside the eyes of a person. This internal pressure of the eye is known as the intraocular pressure (IOP).

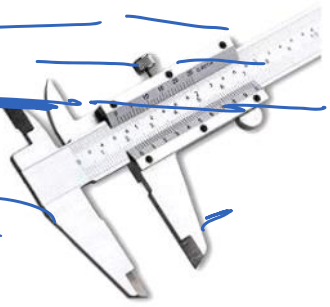
43) Venturimeter:

It is a scientific device that is used to measure the speed and rate of flow of a fluid that is flowing in a pipe. It works on the principle of Bernoulli's equation that says as the velocity increases pressure decreases.



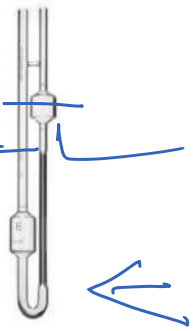
44) Vernier Caliper:

It is used to measure linear dimensions such as distance or straight line between two points. It is an ideal measuring tool to measure the diameter of spherical objects like pipes, cylinders as the jaws of the caliper can be positioned on both the sides of the circumference. It was invented by Pierre Vernier in 1631.



45) Viscometer:

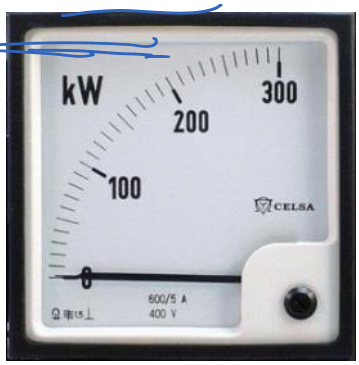
It is an instrument which is used to measure the viscosity of a fluid and semi-solid including the solid food products. Viscosity is the fluid's resistance to flow.



46) Wattmeter:

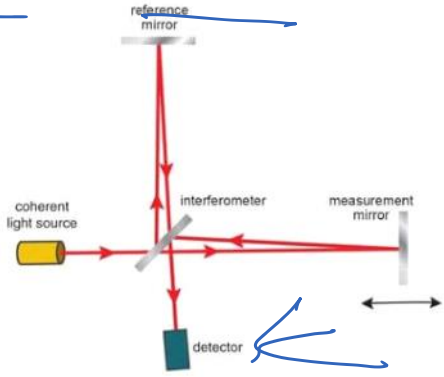
It is a professional, electric instrument that is used to measure the flow of

current or electricity or electric power through high-voltage electricity lines. Along with the flow of current, it also measures the voltage and current values which can be used to calculate power in watts.



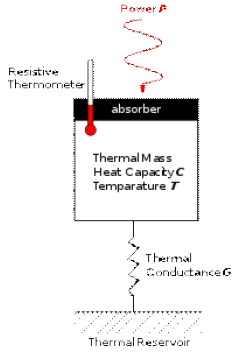
47) Wavemeter:

Wavemeter, which is also known as wavelength meter, is a scientific instrument that is used to measure the wavelength of laser beams with great precision. There are many types of wavemeter such as scanning wavemeters, and static instruments without any moving parts.



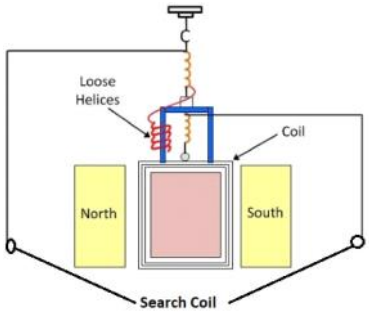
48) Bolometer:

It is a device used to detect and measure heat or electromagnetic radiations of microwave energy.



49) Fluxmeter:

It is a scientific instrument that is used to measure the flux of a permanent magnet. In fact, this device is an advanced version of the ballistic galvanometer with certain benefits like heavy electromagnetic damping and low controlling torque.



Q1. Which device is used to measure the depth of seas and oceans?

A. Gravometer

B. Fathometer

C. Gyroscope

D. Dilatometers

Ans. B

Q2. Name a devise used to measure the sharpness of the electric current?

A. Gravometer

B. Electrometer

C. Galvanometer

D. Dynamometer

Ans. C

Q3. Name an instrument used to measure the sound waves inside the water?

A. Comograph

B. Dictaphone

C. Crescograph

D. Hydrophone

Ans. D

Q4. Name a device used to measure atmospheric humidity?

A. Hygrometer

B. Gravometer

C. Avometer

D. Calorimeter

Ans. A

Q5. Which device is used to detect and measure the purification of the milk?

A. Microphone

B. Heart Lungs Machine

C. Ganong Respiratory

D. Lactometer

Ans. D

Q6. The equipment through which any substance be cut into very small pieces:

A. Manometer

B. Microtome

C. Micrometer

D. Machmeter

Ans. B

Q7. Through which device the illumination and intensity of two light sources are compared?

A. Pyrometer

B. Phototeligraphic

C. Photometer

D. Periscope

Ans. C

Q8. Name a device through which the truthness of the human being is examined?

A. Paicnometer

B. Quadrant

C. Polygraph

D. Radiometer

Ans. C

Q9. Which devise is used to measure the intensity of the earthquake?

A. Seismograph

B. Oscilliograph

C. Comograph

D. Cardiograph

C. Sonograph

D. Cardiograph

Ans. A

Q10. Which device is used to listen the vibrations of the heart and lungs?

A. Spectroscope

B. Stethoscope

C. Stereoscope

D. None of the above

Ans. B