

Non - Recurring assets: Department of Zoology

1. BOD Incubator
2. Bio Safety Cabinet
3. Spirometer
4. Hygrometer
5. Oven
6. Colourimeter
7. Vortex Mixer
8. Turbidity Meter
9. Spectrophotometer
10. Leaf Area Meter
11. Weather Meter
12. Hotplate
13. Microscope
14. Sphygmomanometer
15. PAGE Powerpack
16. Haemometer
17. Haemocytometer
18. Gel electrophoresis Apparatus
19. pH Meter
20. DO Meter



BOD INCUBATOR

Zoology, LAB-2; HCZ/DBT/BOD/01/23

A BOD incubator is a temperature-controlled chamber that creates a stable thermal environment to culture microorganisms like bacteria, yeast, and mold. The incubator monitors and controls temperature, humidity, and CO₂ levels.



BIO SAFETY CABINET

Zoology, LAB-2, HCZ/DBT/BSC/24

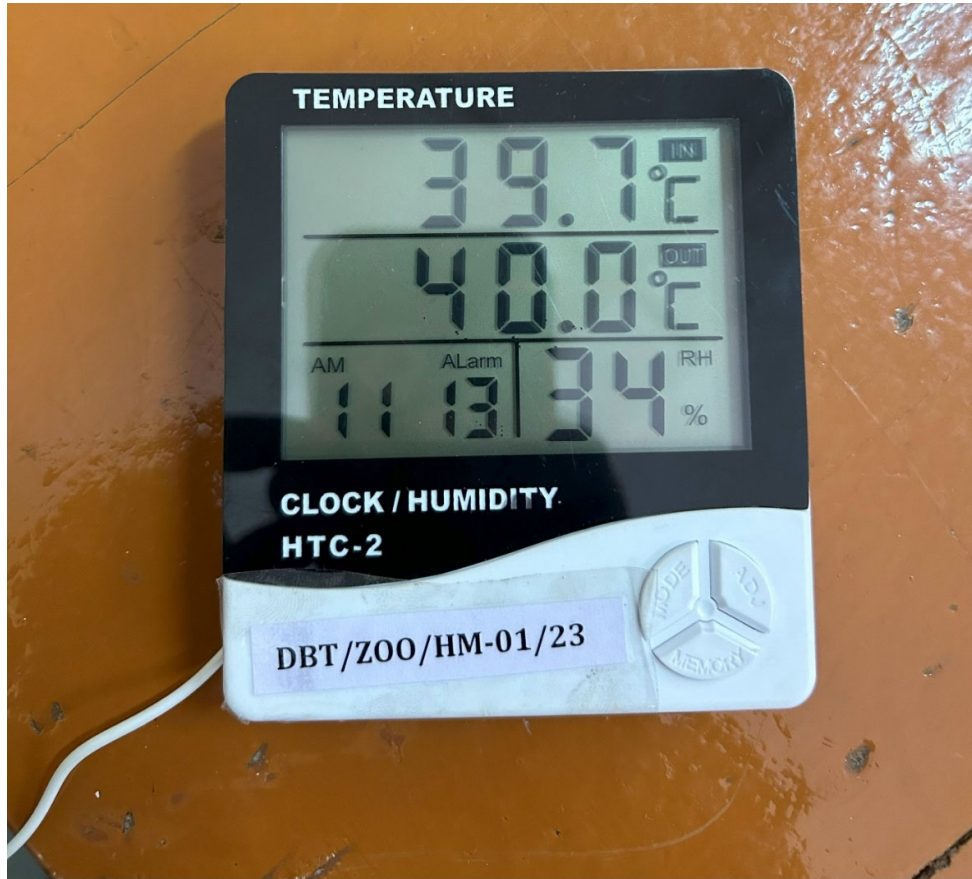
Biosafety cabinets (BSCs) are designed to prevent contamination of the environment, harm to employees, and sometimes even contamination of the product. They work by moving air in specific patterns and filtering it to remove particulate matter.



SPIROMETER

Zoology, LAB-2; HCZ/DBT/SPM/01/23

A spirometer measures the amount of air a person can inhale and exhale. It can also measure the speed of a person's breath. The spirometer works by using an air tube that's placed in the patient's nose or mouth. When the patient breathes in, the air flows to a sensor at the end of the tube, which sends data to a computer for processing. The spirometer can also use other mechanisms to measure air flow, such as a pneumotachometer, which uses flow rate to measure volume. In this type of spirometer, air is breathed through a resistive element that creates a pressure difference across channels. A pressure sensor then converts this difference into an electronic signal that can be displayed.



HYGROMETER

Zoology, LAB -2; DBT/ZOO/HM/01/23

A hygrometer is a device that measures the amount of water vapor in the air, or humidity. It works by using the principle of evaporative cooling, which is the cooling effect that occurs when water evaporates from a surface. The wet bulb thermometer in a hygrometer measures how much the air cools down due to evaporation, which helps to determine the humidity level. The temperature difference between the wet and dry bulb thermometers is then measured.



OVEN

Zoology, LAB-2; HCZ/DBT/ON/01/23

Scientific ovens, also known as hot air ovens, work by circulating hot air through a chamber using fans. The air is heated by elements inside the chamber, and as it warms it becomes less dense and rises. A fan then pushes the air back down, creating a circular pattern that helps to evenly distribute the heat throughout the chamber.



COLORIMETER

Zoology, LAB-2; HCZ/DBT/CM/01/23

A colorimeter measures the concentration of a substance in a medium by analyzing how much light the medium absorbs. The colorimeter's working principle is based on Beer-Lambert's law, which states that the amount of light absorbed is directly proportional to the concentration of the medium.



VORTEX MIXER

Zoology, LAB-2; HCZ/DBT/VM/01/23

A vortex mixer uses centrifugal force to mix samples by creating a vortex, or spiral flow, in the liquid: A vortex mixer has an electric motor with a vertically attached drive shaft that's connected to a rubber cup that's mounted slightly off-center. When the motor is running, the rubber cup oscillates rapidly in a circular motion. A sample container, such as a test tube, is pressed into the rubber cup or touched to its edge. The motion of the rubber cup is transmitted to the liquid inside the container, creating a vortex. The vortex mixes the contents of the sample by inducing rotational movement throughout it.



TURBIDITY METER

Zoology, LAB-2; HCZ/DBT/TM/01/23

A turbidity meter measures the amount of light scattered by particles in a sample. The principle of turbidimetry involves passing a beam of light through a sample in a cuvette and measuring the intensity of the transmitted light. As particles scatter light away from the incident light path, the intensity of the transmitted light decreases.



SPECTROPHOTOMETER

Zoology, LAB-2; HCZ/DBT/SPH/01/24

A spectrophotometer works by measuring how a sample absorbs and transmits light. The process is as follows: A lamp provides a light source. A collimator (lens) transmits a straight beam of light through a monochromator (prism). The prism splits the light into a spectrum of component wavelengths. A diffraction grating, which acts like a prism or mirror, rotates to allow only a specific wavelength of light to pass through the exit slit. The light beam interacts with the sample. A detector measures the amount of light that passes through the sample (transmittance) and the amount of light that the sample absorbs. The detector converts this information into a digital display.



LEAF AREA METER

Zoology, LAB-2; HCZ/DBT/LAM/01/24

A leaf area meter works by optically scanning a leaf placed on a transparent surface. Light-emitting diodes (LEDs) beneath the surface illuminate the leaf, and a mobile sensor captures an image. Leaf area meters are portable, easy to use, and can be used in the field or outdoors without damaging the leaves. They can also measure related parameters, such as areas of leaf disease.



WEATHER METER

Zoology, LAB 2; HCZ/DBT/WM/01/24

Weather meters, also known as weather stations, use a variety of sensors to measure atmospheric conditions like temperature, humidity, wind speed, and precipitation.



HOT PLATE

Zoology MUSEUM; HCZ/DBT/HP/01/24

Hot plates, which can be electric or gas, work by using an electric current or heat from burners to heat an electric alloy wire or coil: Electric hot plates: When plugged in, the plug powers a motor that spins a generator to create electricity, which heats the coils. The current flowing through the wire heats it up and conducts heat through the outer shell. Gas hot plates: Use heat from burners to heat the cooking surface.



MICROSCOPE

Zoology, LAB 1; HCZ/DBT/MICR/ 24

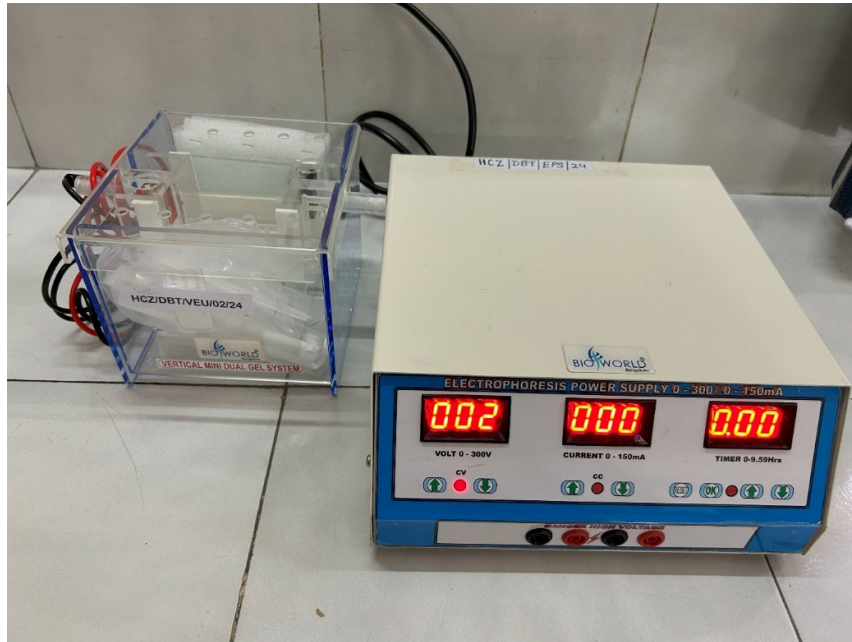
A compound microscope uses a combination of lenses to magnify a sample, typically up to 1000 times its original size. The working principle of a compound microscope is as follows: Light source :Light from a source such as a halogen, mercury, or LED lamp illuminates the specimen. Condenser: Light rays reflected by a plano-concave mirror enter the condenser, where the lens focuses a cone of light onto the specimen through the stage hole. Objective lens: The objective lens, which is close to the specimen, collects light emitted by the specimen and magnifies it to create the main image within the body tube. Ocular lens : Also known as the eyepiece, the ocular lens magnifies the image created by the objective lens. The final image is virtual, inverted, and magnified behind the object.



SPHYGMOMANOMETER

Zoology, LAB 2; HCZ/DBT/SP/24

A sphygmomanometer, also known as a blood pressure monitor, works by measuring the pressure in an artery using an inflatable cuff and a pressure gauge: Wrap the cuff around a limb, usually the brachial artery in the upper arm. Inflate the cuff until the pressure in the bladder is greater than the typical systolic pressure. Slowly deflate the cuff. As the cuff deflates, pulsations will appear when the systolic pressure value is approached. When the first pounding sound is heard, the systolic blood pressure can be read from the pressure meter. When the pounding stops, the diastolic blood pressure can be read from the pressure meter.



PAGE POWERPACK

Zoology, LAB 2; HCZ/DBT/EP01/24

A hydraulic power pack, also known as a hydraulic power unit, is a combination of equipment that uses hydraulic fluid dynamics to generate high pressure. The pack's components include: Power source :An electrical source, such as a generator, external motor, or mains, charges the pack. Motor: Draws energy into the pack and distributes it to the hydraulic system through a control valve. Hydraulic pump:Converts mechanical energy into hydraulic energy, creating a flow of fluid that generates pressure to drive hydraulic motors and actuators.



HAEMOMETER

Zoology, LAB 2; HCZ/DBT/HG/23

Hemoglobinometer measures the hemoglobin content of blood by comparing the color of light that passes through a hemolyzed blood sample to a standard color. The results are expressed in grams of hemoglobin per 100 milliliters of blood.



HAEMOCYTOMETER

Zoology, LAB 2; HCZ/DBT/HM/23

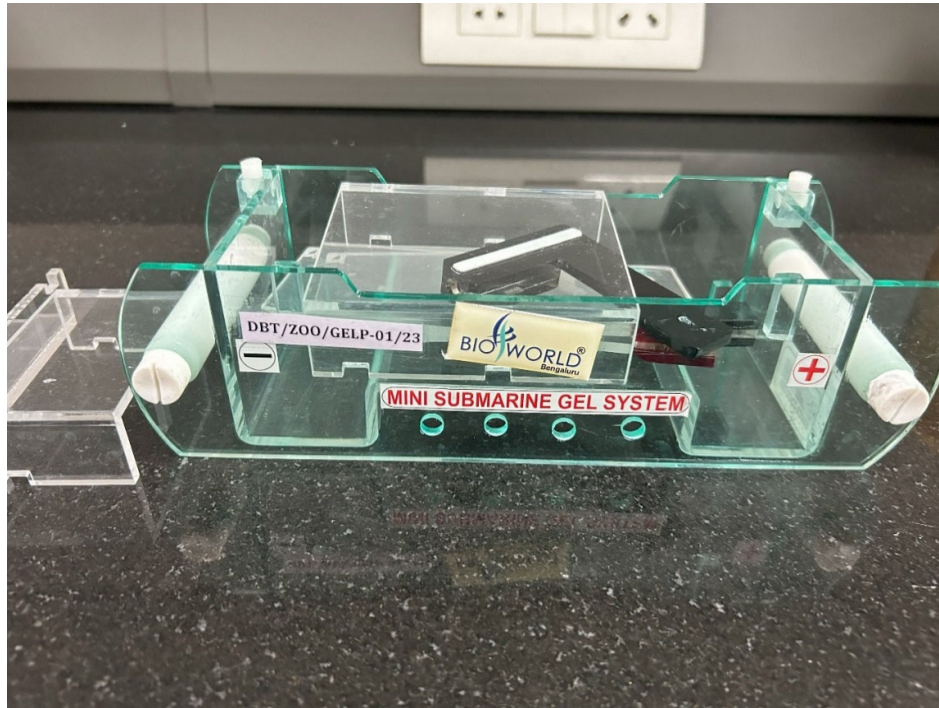
A hemocytometer is a microscope slide with a counting chamber that allows for precise cell counting within a specific volume. The principle of operation is as follows: Chamber : The hemocytometer has a thick glass slide with a rectangular indentation that creates a chamber. The chamber is carefully crafted so that the area bounded by the lines is known, and the depth of the chamber is also known. Grid: The chamber's slide has a grid etched onto it that segments the volume into smaller, countable areas. The most commonly used grid is the Improved Neubauer chamber, which has an H-shaped indent at the center of the slide that separates the space into two counting chambers.



WATER BATH

Zoology, LAB 2; HCZ/DBT/WB-01/23

A water bath is a laboratory instrument that uses heated water to keep samples at a constant temperature for extended periods of time. It's made up of a heating unit, a water chamber, and a control interface. The water bath works by using sensors to convert the water's temperature into a resistance value, which is then amplified and compared by an integrated amplifier. This controls the signal, which regulates the power of the electric heating tube to keep the water at a constant temperature.



GEL ELECTROPHORESIS APPARATUS

Zoology, LAB 3; DBT/ZOO/GELP-01/23

Gel electrophoresis is a technique used to separate DNA fragments according to their size. DNA samples are loaded into wells (indentations) at one end of a gel, and an electric current is applied to pull them through the gel. DNA fragments are negatively charged, so they move towards the positive electrode. Gel electrophoresis separates molecules by pushing them through a gel with an electrical field. The gel has small pores, similar to a sieve, that allow molecules to pass through when an electric current is applied. One end of the gel has a positive charge and the other has a negative charge, which causes charged molecules to move through the gel. This movement is called migration.



PH METER

Zoology, LAB 3; DBT/ZOO/PHM-01/23

A pH meter measures the hydrogen ion activity in a solution to indicate its acidity or alkalinity as a pH value. The pH meter's working principle is based on the exchange of ions between the sample and the glass electrode's inner solution, which generates an electrical voltage. The pH meter then converts this voltage into a readable pH value. The working principle of a pH probe depends on the exchange of hydrogen ions.



DO METER

Zoology, LAB 2; HCZ/DBT/DO-01/23

Dissolved oxygen (DO) meters work by measuring the amount of oxygen present in a liquid or gas. In these sensors, oxygen diffuses from a sample through an oxygen-permeable membrane and into the sensor, where it undergoes a chemical reduction reaction that produces an electrical signal. The sensor's cathode reduces the oxygen molecules that pass through the membrane, creating a small voltage. When there's no oxygen, the DO meter reads 0 millivolts (mV). As the number of oxygen molecules increases, the DO reading also increases. The voltage can be read using a multimeter or analog-to-digital converter.