Department of biology

Microbiology Lab

((List of Microbiological Lab Instrument))

Lab/2

2 stage

By

Ph.D Asseel Hashim Radhi

Msc. Zahraa Jawad Kadhim

List of Microbiological Lab Instrument

1. Analytical Balance:

An analytical balance is a type of balance that is commonly used for the measurement of mass in the sub-milligram range. As they are highly precise and based on advanced technology, analytical balances are explicitly used in laboratories for the effective completion of tasks like weighing test materials and sampling amounts, formulation, density determination, purity analysis, quality control testing, and material and conformance testing.

2. Autoclave:

An autoclave is a pressurized chamber used for the process of sterilization and disinfection by combining three factors: time, pressure, and steam.

Autoclaves use steam as their sterilization agent. **The basic principle of an autoclave** is that all the items within the autoclave come in direct

contact with the steam for a particular period irrespective of the nature of the material- whether it is liquid, plastic ware, or glassware. Autoclaves are mostly used for the sterilization of medical or laboratory equipment with the capacity of sterilizing a large number of materials at once. They are commonly used for the preparation of culture media during laboratory applications.

3. Bunsen burner:

Bunsen burner is a standard tool used in laboratories, named after Robert Bunsen. It is a gas-fueled single open flame. It is commonly used for processes like sterilization, combustion, and heating. In medical or microbiology laboratories, it is commonly used for micro-loop sterilization.

4. Centrifuge:

A centrifuge is a device that allows the rotation of an object about a single axis, where an outward force is applied perpendicularly to the axis. A laboratory centrifuge is motor-based and allows the rotation of a liquid sample resulting in the separation of the components of the mixture. The primary application of a centrifuge is the separation of particles suspended in a suspension. It can be used for the separation of cell organelles, nucleic acid, blood components, and separation of isotopes.

5. Colony Counter:

A colony counter is used to estimate the density of a liquid culture by counting the number of CFU (colony forming units) on an agar or culture plates.

6. Deep Freezer:

Deep freezers are based on the principle that under extremely low temperatures, there is minimum microbial growth which allows for the protection and preservation of different substances. Deep freezers are used in laboratories to store and preserve medical equipment, food items, blood samples, medicines, and injections, etc. for a more extended period of time.

7. Hot air oven: is a type of dry heat sterilization which is performed on dry materials and on substances that do not melt or catch fire under high temperatures. A hot air oven can be used to sterilize materials like glassware, metal equipment, powders, etc. It allows for the destruction of microorganisms as well as bacterial spores.

8. Incubator:

device that is used in laboratories for the growth and maintenance of microorganisms and cultures. Incubator provides an optimal temperature, pressure, moisture, among other things required for the growth of microorganisms.

9. Laminar Air Flow/ Laminar Hood:

This device creates a sterile environment with the flow of sterile air through a High-Efficiency Particulate Air (HEPA) filter and shortwave ultraviolet germicidal lamp that sterilizes the workstation. It is used for experiments related to plant tissue culture and for the experiments of genetic transformation.

10. Magnetic Stirrer:

Magnetic Stirrer is a device commonly used in microbiology laboratories for the purpose of mixing liquids.

11. Microscope:

Microscopes are devices that allow the observer to have an exceedingly close view of minute particles.

12. pH Meter:

A pH meter is a device used in laboratories that measure the H-ion concentration in water-based solutions to determine the acidity or alkalinity of the solution.

13. Spectrophotometer:

The spectrophotometer is an optical instrument for measuring the intensity of light in relation to wavelength. Based on the amount of light absorbed by a colored solution. In a microbiology laboratory, a spectrophotometer is applied for the measurement of the substance concentration of protein, nucleic acids, bacterial growth, and enzymatic reactions.

14. Vortex Mixer/ Vortexer:

A vortex mixer is one of the basic technologies used for the mixing of samples in glass tubes or flasks in laboratories. Vortex mixer is mostly used for the mixing of various sample fluids in the sample tubes and also allows for the homogenization of cells and cell organelles.

15. Water Bath:

Water baths are primarily used for heating samples under a controlled temperature. These are suitable for heating chemicals that might be flammable under direct ignition.

16. Water Distiller:

A water distiller is a device that purifies water by the process of distillation. This instrument is commonly used in medical laboratories, microbiology laboratories, organic chemistry laboratories, and medical industries. It is used to obtain distilled water required for many lab tests as well as for the preparation of culture media.