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SEC :- A

Assignmnt :- Microbiology.

QNO:--1

ANS:-- NAMES OF EQUIPMENTS USED IN MICROBIOLOGY LAB:--

Instruments used in Microbiology Lab with Principle and Uses:-

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14. pH Meter

15. Spectrophotometer

16. Vortex Mixture/ Vortexer

17. Water Bath

18. Water Distiller.

It includes preparing stained smears, culturing micro-organisms, conducting immunology experiments, performing tests to identify bacteria and fungi, and studying microbial growth control methods. NOTE: Computer Equipment's Every Microbiology Laboratory Should Have

Hot Air Oven for Sterilization: It is used for sterilization of glassware's, such as test tubes, pipettes and petri dishes. ...

Drying Oven: ...

Autoclave: ...

Microbiological Incubator: ...

BOD Incubator (Low Temperature Incubator): ...

Fridge (Refrigerator): ...

Deep-fridge: ...

Function of Equipment and Uses:-------

1) An analytical balance

Uses

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) Autoclaves:-

Uses

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) Centrifuge:-

Uses

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.

4). Deep Freezer

Uses

A deep freeze can be used for the preservation of different things used in the laboratories for a very long period of time. Deep freezers are used in laboratories to store and preserve medical equipment, food items, blood samples, medicines, and injections, etc. for a more extended.

5) Hot plates:-

Uses

In a laboratory, hot plates are used to heat glassware and their components.They are used over water baths as in water baths might be hazardous in case of any spills or overheat.

6) Hot air oven:-

Uses

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.

7) Incubators

Uses

Incubators have a wide range of applications including cell culture, pharmaceutical studies,

hematological studies, and biochemical studies.Incubators can also be used in the steam cell research area.

Read More: Incubator- Definition, Parts, Working, Types, Uses, Precautions

8). Laminar Air Flow/ Laminar Hood

Uses

Laminar Hood is commonly used to conduct processes that are sensitive to contamination.It is used for experiments related to plant tissue culture and for the experiments of genetic transformation.

9. Magnetic Stirrer

Uses

It is usually used for mixing various liquid components in a mixture in a chemical or microbiology laboratory.This device is used in place of other stirrers as it is noise-free and because the size of the stir bar is so tiny, there is less chance of contamination.

10). Microscope

Uses

Based on the type of microscopes, different microscopes are used for different purposes.They are primarily used for the observation of minute particles which cannot be observed with naked eyes.

11). pH Meter

Uses

A pH meter is primarily used to measure the acidity of pharmaceutical chemicals, cultures, soil, and water treatment plant.It can be used to measure the acidity level in wine and cheese during their production.

12). Vortex Mixture/ Vortexer

Uses

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.

13). Water Bath

Uses

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.

Qno 2:----------*********

Answer:--------********

Sterilization can be achieved through various means, including heat, chemicals, irradiation, high pressure, and filtration. Sterilization is distinct from disinfection, sanitization, and pasteurization, in that those methods reduce rather than eliminate all forms of life and biological agents present.

Sterilization describes a process that destroys or eliminates all forms of microbial life and is carried out in health-care facilities by physical or chemical methods. Steam under pressure, dry heat, EtO gas, hydrogen peroxide gas plasma, and liquid chemicals are the principal sterilizing agents used in health-care facilities. Sterilization is intended to convey an absolute meaning; unfortunately, however, some health professionals and the technical and commercial literature refer to “disinfection” as “sterilization” and items as “partially sterile.” When chemicals are used to destroy all forms of microbiologic life, they can be called chemical sterilants. These same germicides used for shorter exposure periods also can be part of the disinfection process (i.e., high-level disinfection).

Disinfection describes a process that eliminates many or all pathogenic microorganisms, except bacterial spores, on inanimate objects (Tables 1 and 2). In health-care settings, objects usually are disinfected by liquid chemicals or wet pasteurization. Each of the various factors that affect the efficacy of disinfection can nullify or limit the efficacy of the process.

Factors that affect the efficacy of both disinfection and sterilization include prior cleaning of the object; organic and inorganic load present; type and level of microbial contamination; concentration of and exposure time to the germicide; physical nature of the object (e.g., crevices, hinges, and lumens)

Physical methods of sterilization- Heat, Filtration, Radiation

Moist Heat Sterilization. At temperatures below 100°C. At a temperature of 100°C. At temperatures above 100°C.

Dry heat sterilization. Red Heat. Flaming. Incineration. ...

Filtration. Filtration sterilization of liquids. Filtration sterilization of gases.

Irradiation. Ultraviolet (non-ionizing) radiation. Ionizing Radiation.

Methods Of Disinfection And Disinfectant Agents Used. Generally, two methods of disinfection are used: chemical and physical. The chemical methods, of course, use chemical agents, and the physical methods use physical agents. Historically, the most widely used chemical agent is chlorine.

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****THE END****