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Question-1:- Define the following terms.

Answer:

i. PH Meter:-

PH Meter is a device used for the measurement of PH from the solution i-e very simple and speedy device to measure the acidity and alkalinity of a fluid in the mixture

→It's measure the Power of Hydrogen in the solution.

→It used for the Laboratory Chemicals, Water, Beverages, Washing Powder etc.

ii. Vortex Mixer:-

Vortex mixer is a simple device that is used commonly in the laboratories to mix small vials of liquid solution or substances

→It is mainly used in the Laboratory for sample and reagent maxing.

iii. Balance:-

Balance is a device used for measuring weight or mass of the object or substances e.g. Analytical balance which is used in the laboratories to weigh substances and samples between 00.1 to 500 Milligrams

iv. Water still:-

Water Still is an instrument that is used in the laboratories for purification of water through the Distillation method.

→Distillation is a method of separating the component or substances from a liquid mixture by selective evaporation and condensation.

v. Deionizer:-

Deionizer is an instrument that is used in the laboratories for purification of water through the Deionization method.

→Deionization is a chemical method in this method uses specially manufactured ion-exchange resins which exchange hydrogen and hydroxide ions for dissolved minerals and then recombine to form water

→Water removes all of its mineral ions such as Cations like Sodium, Calcium, Iron and Copper.

→Anions such as Chloride and Sulfate,

Question#2: Describe Electrophoresis and its importance?

Answer: **Electrophoresis:-**

Electrophoresis is the study of movement of charged particles (DNA, RNA, Protein) in an electric field is known as Electrophoresis.

→The migration of charged particles under the influence of electricity

→It has two ends Cathode and Anode.

→Positively charged molecules moves towards Cathode.

And

→Negatively charged molecules moves towards Anode.

→The separation is based upon size of molecules.

→The smaller molecules size move faster while larger the molecules size move slowly.

Importance of Electrophoresis:-

→Electrophoresis used in DNA fingerprinting.

→It is also used in Paternity Testing.

→In forensic study (criminology)

→Very useful in Genetic and for studding Molecular Biology

→Most commonly used in DNA sequencing.

→Purification and Analysis of vaccine

Question # 3: Write a note on Flow Cytometery?

Answer: **Flow Cytometery:-**

Flow Cytometery is a technology used for measuring properties of cell (physical and chemical) as they in a fluid suspension across an illuminated light is known as Flow Cytometery.

Qualitative and Quantitative Analysis:-

Most commonly analyzed materials are;

→Blood

→Bone Marrow Aspirate

→Lymph node suspension

Component of Flow Cytometery:-

There are three main components;

1) The Flow System (Fluidics)
2) The Optical System (Light Sensing)
3) The Electronic System (Signal Processing)

Application of Flow Cytometery:-

→Used in transplantation, Hematology (Malignancy) And Reticulocyte

→ Cell Surface Markers (CD Marker)

→Extensively used in research for detection of DNA damage

→Nuclear Antigen (Detect Auto Antibodies)

→Enzymatic Activity and cell-counting

Unique in Flow Cytometery:-

→Multipara metric

→Rapid analysis of large number of cells

→Detection of rare cells population

→Allow physical isolation of cell of intercuts

Question # 5: Explain Autoclave, its uses, and components?

Answer:- **Autoclave:-**

Autoclave is a pressure chamber used for sterilization; it is a physical method of sterilization is known as Autoclave.

→Also known as sterilizer

Mechanism of action:-

→Denaturation

→Coagulation

Uses of Autoclave:-

→To sterilize material;

- Test Tubes
- Pipettes
- Petridishes

→To sterilize contaminated material before disposal

- Culture plates
- Syringes
- Glassware
- Gloves

→Also used to sterilize dental instruments or surgical instruments

Components of Autoclave:-

→Chamber

→Control panel

→Air Pump System

→Pressure Gauge

→Pressure Knob

→Safety Handle

Question # 4: What do you know about Beer Lambert law (uses, principle)?

Answer: **Beer Lambert Law:-**

The Beer-Lambert law stated that quantity of light absorbed by a substance dissolved in a fully transmitting solvent is directly proportional to the concentration of the substance and the path length of the light through the solution is known as Beer Lambert Law.

Uses of Beer Lambert Law:-

In clinical And research Laboratories, Beer Lambert Law are used for the quantitative estimation of different compounds; i-e

→Glucose

→Urea

→Cholesterol

→Creatinine

→Bilirubin

→Protein

→Nucleic Acids

→Enzymes etc.

They are estimated from the Blood, Urine, and Cerebrospinal Fluid etc.

- ❖ This Law is Fix in the following Instruments i-e

→In Micro Lab 100

→Micro Lab 200

→Micro Lab 300

→Spectrometer 4010 , 5010 etc.

Principle of Beer Lambert Law:-

→ Beer Lambert Law is based on estimation of light absorbing nature

→Linear relationship between absorbance and concentration of an absorbing substance

-: THE END:-