

Final -Term Assignment (spring-20)

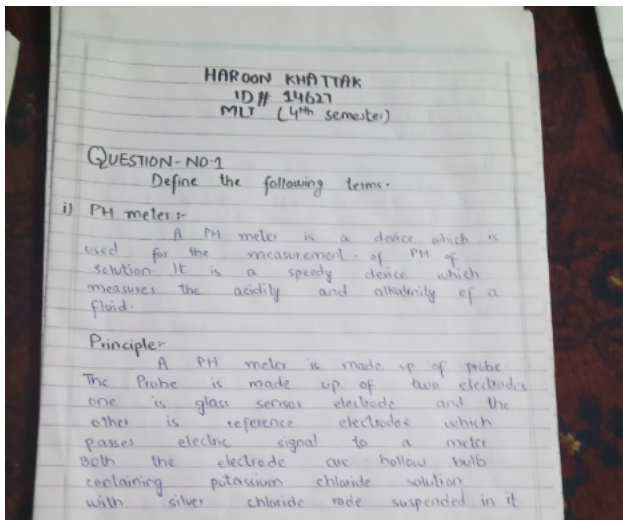
Course Title: biomedical \ lab instrumentions (MLT)
Instructor: Saima hadi

Marks: 50

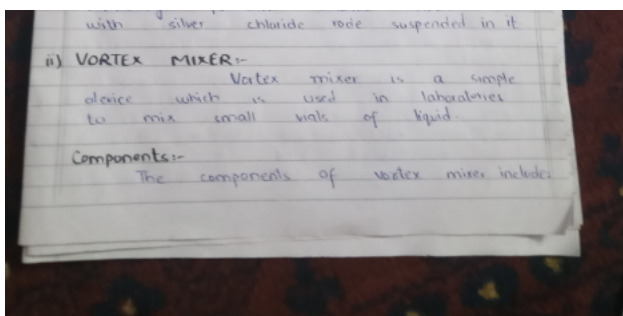
Attempt all questions .Each question carry 10 marks.

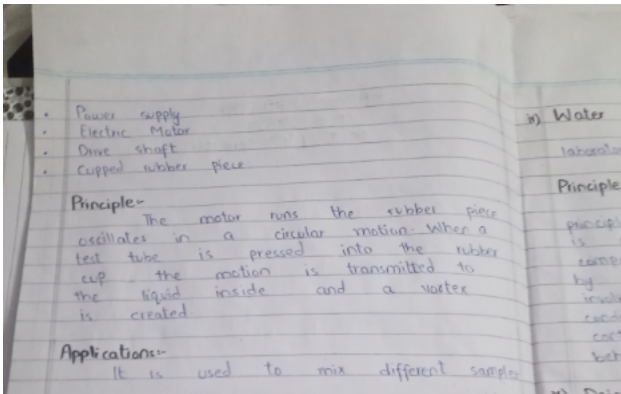
Q1. Define the following terms.

i. PH Meter

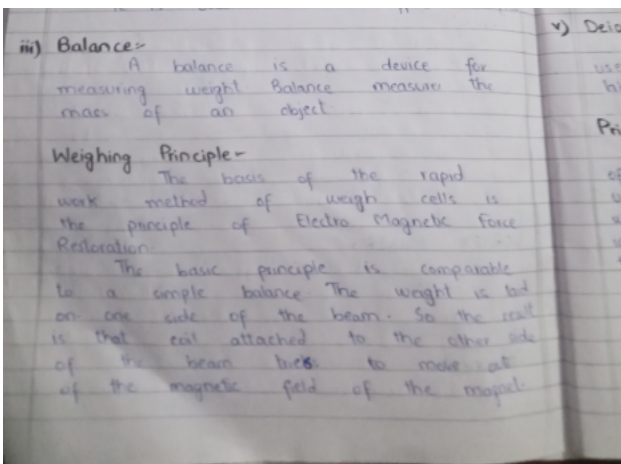


Vortex Mixer

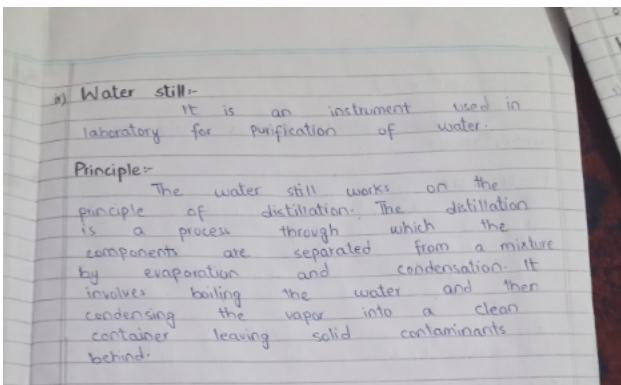




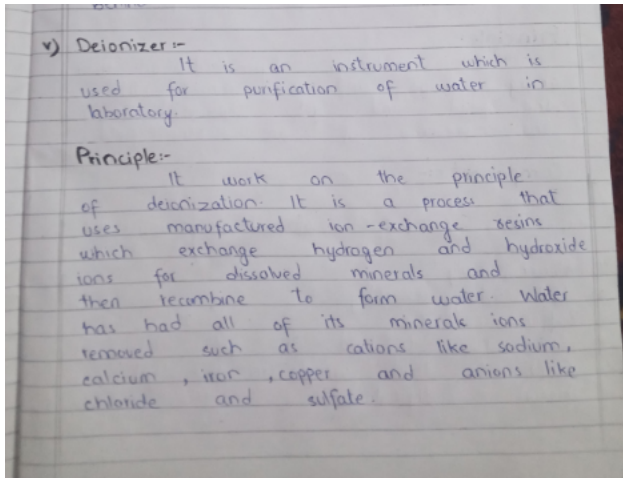
Balance



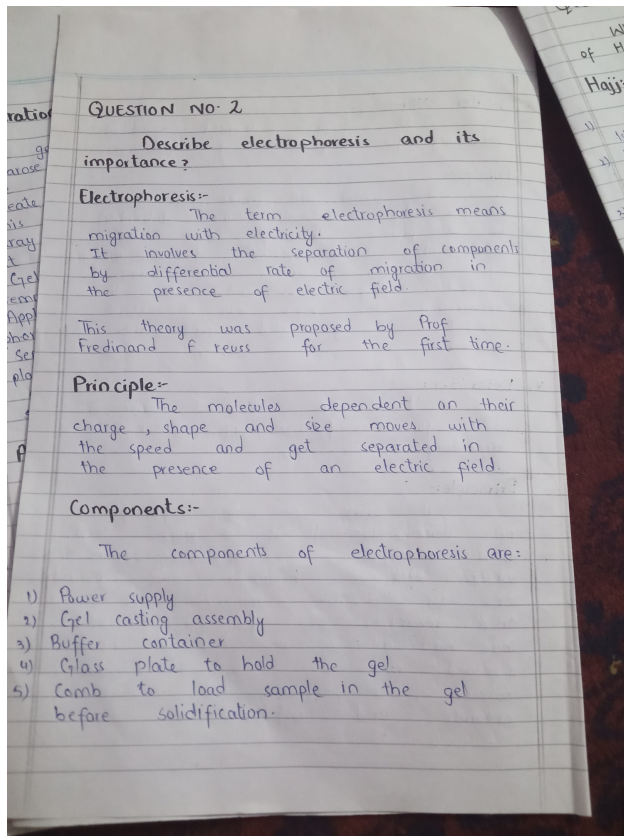
Water still

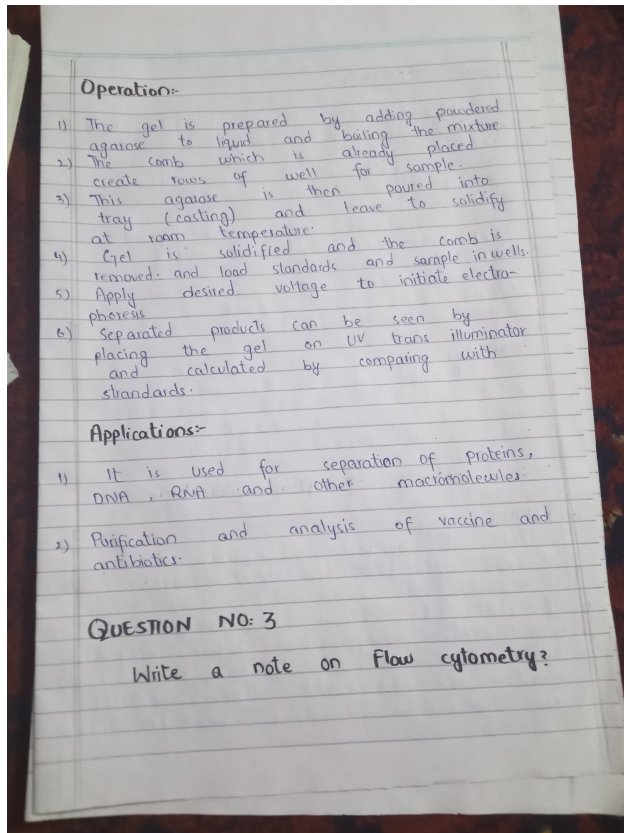


Deionizer



Q2. Describe Electrophoresis and its importance?





Q3. Write a note on Flow Cytometry?

FLOW CYTOMETRY:-

Flow cytometry is a technology that is used to analyze physical and chemical characteristics of particles in a fluid as it passes through at least one laser.

- Cell components are excited by the laser to emit light at varying wavelengths.
- Up to thousands of particles per second can be analyzed as they pass through liquid stream.

Example:-

Examples of properties measured include particle's relative granularity, size and fluorescence intensity as well as its internal complexity.

Main contents of flow cytometry:-

1. FLUIDICS:-

It transport the particles in a stream of fluid to laser beam.

If cells are from solid tissue then they need disaggregation before analyzing. Cells from animals, plants, bacteria, yeast are measured other particles can also be examined like chromosomes

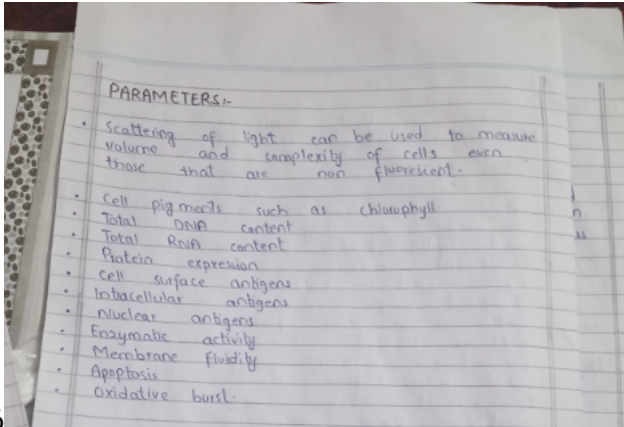
- or nuclei
- 3) Section of fluid stream that contains particles is referred as sample core.

OPTICS SYSTEM:-

- 1) Laser which illuminates particles present in stream as they pass through and scatter light from laser.
- 2) Fluorescent molecules that are on particle emit fluorescence which is detected by positioned lenses.
- 3) Up to six or more fluorescences when light is scattered it is determine for two different angles.
- 4) Optical filters then direct light signals to relevant detectors, which emit electronic signals proportional to signals that hit them.
- 5) Data collected on each particle are determined based on their fluorescent and light scattering properties.

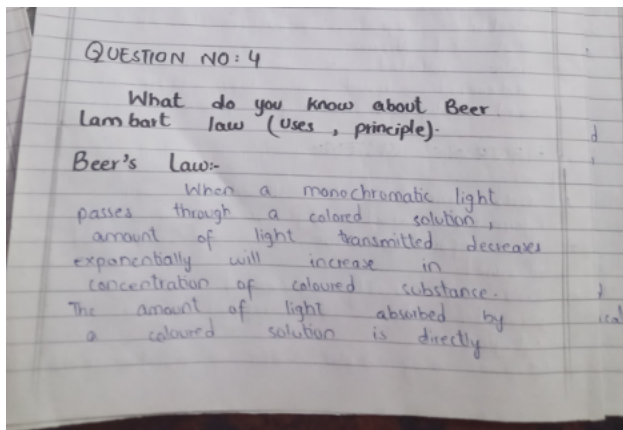
ELECTRONICS SYSTEM:-

- 1) Data can then be studied to gain information about large number of cells.
- 2) The information can be identified and measured.
- 3) Data are usually presented in single parameter which are referred to as cytograms.
- 4) Cytograms may display data in the form of dot



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Q4 .What do you know about Beer Lambert law (uses , principle)?



proportion to the conc. of substance in the coloured solution.

Lambert's Law:-

The amount of light transmitted decreases exponentially with increase in diameter of the cuvette or thickness of coloured solution through which light passes.

The amount of light absorbed by a coloured solution depends on diameter or thickness of the coloured solution.

Principle:-

When a monochromatic light passes through a coloured solution, some specific wavelengths of light are absorbed which is related to colour intensity.

The amount of light absorbed or transmitted by a colour solution is accordance with law of Beer's and law of Lambert's.

Applications:-

- 1) It is widely used in hospital and laboratory for estimation of biochemical samples, like plasma, serum, cerebrospinal fluid, urine.

It is also used to quantitative estimation of several components as well as glucose, proteins and other various biochemical compounds.

They are used by the food industry and by manufacturers of paints and textile.

Q5. Explain Autoclave , its uses ,and components?

It is also used to quantitative estimation of serum components as well as glucose, proteins and other various biochemical compound.

They are used by the food industry and by manufactures of paints and textile.

QUESTION NO: 5

Explain Autoclave, its uses and components?

AUTOCLAVE :-

It is a pressurized device designed to heat aqueous solutions above their boiling point at normal atmospheric pressure to achieve sterilization.

The word Auto means "self" and elave means "self locking device".

This instrument is also termed as sterilizer.

It was first developed by Dr. Denis Papin and named it as steam digester.

Principle:-

Water boils when its vapour pressure equals to atmospheric pressure. The temperature at sea level is 100°C . When water is boiled within a closed vessel at increased pressure the boiling point of water increases and temperature of steam produced. The principle is employed in sterilizing material by steam at temperature higher than 100°C and the process is called autoclaving.

Components:-

- 1) Pressure Gauge
- 2) Safety Valve
- 3) Autoclave lid
- 4) Handles
- 5) Autoclave body
- 6) Steam release valve
- 7) Vacuum release valve
- 8) Outer stand

Uses:-

1. Glassware
2. Plastic tubes and pipette tips
3. Solution and water
4. Surgical instrument
5. Animal food and bedding
6. Biohazardous waste