

Course Title: Biomedical instrumentation (MLT 4TH)

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Q1) EXPLAIN THE COMPONENTS OF CENTRIFUGE?

ANSWER...

COMPONENT OF CENTRIFUGE:

Centrifuge is a device of the method of the separating particle from a solution according to their density, shape viscosity and size of the medium. There are the following a few basic components of centrifuge are:

1. CENTRAL SHAFT:

Is the rotate that part when spinning is affected manually,

2. HEAD:

That parts of the centrifuge of the holds the bucket and connected directly to the centre shaft or spindle.

3. BUCKET:

The portion that hold test tube contained a given sample to be spine.

The principle component of a centrifuge is rotor which is moving peat, multiple rotator they can wed and rotor or fixed it. rotator have lies to present simple form flying out centrifuge is a device is the techniques for separates particles from a solution according to the viscosity, density, size and shape of the medium.

THE END

Q2) WRITE DOWN THE APPLICATION OF FLAMEPHOTOMETER?

ANSWER...

FLAMEPHOTOMETRY:

Flame photometer are the branch of spectroscopy in which the examined the species of the spectrometer in the forms of atoms, flame photometry are instrument that are used for the analysis or determine the inorganic chemicals of the concentration of metal ions such as calcium, lithium and sodium etc, flame photometry are measured by Base on light.

APPLICATION:

Application of the flame photometer is a quantitative and qualitative both are it, flame photometry with monochrome to emit radiation of characteristics wavelength which help detect to the present of a particle met in the sample the help of availability of determine alkali are alkaline metals are critical soil cultivation. Fertilizer agriculture requirements of the sale analyzed by flame test of the soil, field of clinical K^+ and N^+ ions in the body fluids, heart and muscles are determined by diluting the serum of blood and aspirations into the flame. Soft drinks of analysis juices like fruits and beverages or alcoholic can also be analyzed by using flame photometry.

THE END

Q3) WRITE NOTES A WATER BATH?

ANSWER...

WATER BATH:

The water bath is used to store water at a constant temperature for sampling in the laboratory. A rotating water bath is a lab constant temperature apparatus which provide a head source for a variety of devices that require heating. The laboratory water bath is preferred source of heat for combustible chemicals rather than an open flame to prevent ignition. The laboratory water bath always has a digital interface so that consumer can set the desired temperature. All laboratory water baths have a digital interface to allow users to set the desire temperature the indicator light indicates the work bath in the working. Applications in water bath in laboratory. Materials to include are heating reagents cell culture or melting substrates or incubating cell culture as well used being to enable certain chemical reaction is temperature it high the prevents excessive vapor from overheating fluid the periodic over time allow a macro amount of liquid heat without the concentration of the ingredients being changed to vapor for example, blood banking, coagulation test, thawing ffp, bottles of incubated of culture.

COMPONENTS;

Digital/analogue interface,

Container/tank bath,

Thermometer,

Thermostat/ regulatory,

Insulated metal,

Stainless steel test tube,

PRECAUTION;

Change the meter daily.

Always keep the lid closed.

Set up away from flammable materials.

Raise the temperature to 90° Celsius or higher for thirty minutes once a week and put disinfectant.

TYPES,

1. Shaking water bath.
2. Standard water bath.
3. Coli form water bath.

THE END

Q4) DESCRIBE CHROMATOGRAPHY AND ALSO IT'S PHASES?

ANSWER...

CHROMATOGRAPHY:

Chromatography which as chrome mean color and graphs mean plot or trace measure drew up etc, separation of the techniques. In 19th century Dr, Mik hails Tsvet invented a system similar to paper chromatography. Useful techniques for the number of compounds are efficiently separation and present in a matter. These closely related compounds may include protein, vitamins, drugs and amino acids etc.

PHASES,

The following has two phases will be discussed it.

1. Mobile phase chromatography
2. Stationary phase chromatography

1. MOBILE PHASE CHROMATOGRAPHY;

Mobile phase chromatography that solvent which come the sample analyte. Mobile phase are also called gas or liquid phase and passes over the stationery phase. Mobile phase is contain is high pressure gas. A small drop of the liquid is placed at one end go the paper the end of the paper are immersed in mixture solvent is the solvent move up the papers. Some molecules is faster move the other and different

molecules will move and varies speed and different position it soluble in the solvent will run the solvent and chromatography was finished.

2. STATIONARY PHASE CHROMATOGRAPHY;

The stationery phase chromatography is a substance are fixed in the place for the chromatography method in include silica layer in the chromatography thin layers. Stationary phase are solid or liquid. A stationary phase that are a layer of coating on auxiliary medium that interacts with analyses,

THE END

Q5) WHAT IS MICROSCOPE? ALSO EXPLAIN PRINCIPLES OF MICROSCOP.

ANSWER...

MICROSCOPE,

Microscope comes from Greek word which micro mean small and scope mean to see. it is an optical instrument that to magnify a small object at several time layer to visible by the naked eyes also called microscope. First microscope developed in 1590 in Hand Janssen.

PRINCIPLE:-

Based on three features of lenses are arranged in the sequence:

1. Magnification,
2. Resolution,
3. Contrast,

1. MAGNIFICATION:

To enlarge of the images magnification multiplies by object and equal to image. Magnification is equal to image divided by object. That object of any size of magnify to enlarge the image a physical words I'd defined as "the measure of the ability of a lens or other optical and to magnifies that.

2. RESOLUTION:

The details separate of the two images or objects. Important part of microscope which is objective and allows to a clear image the most important of the objective resolution. Resolution is separates or distinguished between small object that are close are both or together it is the source of resolution are used a light these are important factor.

3. CONTRAST:

Different in light intensity between background and images different between background and object also known contrast. Intensity I_d equal to condense plus lens both are work to produce the details visible to eye of the image.

THE END

Q6) EXPLAIN THE TYPES OF CENTRIFUGE?

ANSWER...

CENTRIFUGE,

Centrifuge is a device of the method for separating particles form a solution according to their density, shape, viscosity and size of the medium.

TYPES,

There are the following three types,

1. Low speed 5×10^3 rpm.
2. High speed max 5×10^4 rpm.
3. Ultracentrifuge max 10^5 rpm.

1. LOW SPEED CENTRIFUGE,

The maximum speed of the low speed centrifuge has a 4000-5000 rpm, low speed centrifuge have most used laboratories for routine sedimentation and heavy particles. two types of used the rotators

A) Swinging,

B) Fixed angle.

Sedimentation used for red 3100d cells when the particles are firmly bound to the superintendent sputtering.

2. HIGH SPEED CENTRIFUGE,

High speed centrifuge are used to biochemical called sophisticated and higher speeds temperature. High speed centrifuge is maximum speed about of 15000-20000 rpm, three types of rotators for high speed centrifugation is

- A) Swinging,
- B) Vertical rotators,
- C) Fixed angle.

3. ULTRACENTRIFUGE,

Ultra centrifuge are maximum speed of 65000rpm.the most instrument like sophisticated it the high temperature is caused by the high speed so the pulley chambers should be refrigerated and kept in a high vacuum, used in analytical works.

TYPES OF ROTATORS,

- A) Fixed angle rotator,
- B) Swinging rotators,
- C) Vertical rotators.

A) FIXED ANGLE ROTATOR,

Vertical angle of the tube about 14-40 angle, Useful for differential centrifugation short distance travel and fast move partially are the side of outwards.

B) SWINGING ROTATOR CENTRIFUGES,

Allow best separation longer distance of travel for example in the density gradient centrifugation normally used for density gradient centrifugation. Rotator accelerates to horizontal position.

C) VERTICAL TUBE ROTATOR CENTRIFUGE,

Short distance and move of particles short separation it a time .End of centrifuge penetrative fall back into solution it, Verticals parallel to rotor axis.

THE END