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**Course title.** Biomedical instrumentation

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**Program.** BS MLT (4) Semister

**Exam.** Mid term 2020

**Date** 22 April 2020

## Q1. What is Microscope ? and also explain principle of microscope ?

**Answer :. Microscopy : -**

It is optical instructor consisting of a lens or combination of lens for making enlarged image of minute objects .

**Principal of microscopy :**

Based on three features lenses are arrange in sequence.

**(1) > Magnification :** Magnification is how much bigger a sample appears to be under the microscope than it is in real life .

**(2) Resolution :** is the ability to distinguish between two points on an image the amount of detail .

**(3) Contrast :** is defined as difference in light intensity between the image and the adjacent background relative the overall background intensity.

## Q2.Describe chromatography and also its phases?

**Answer : chromatography :** is a series of analytical techniques that can be used to separate mixtures of compounds for further use or for analysis .

- **19th** century Dr mik hail trust invented a system similar to paper chromatography.

In all from of chromatography , a **mobile phase** moves through or cross a **stationary phase .**

**Mobile phase :** this phase moves . The more soluble compounds in the mixture are carried faster as the mobile phase moves . Either a liquid or a gas .

**Stationary phase :** this phase does not move . Compound in the mixture are attracted to it

(Absorbed) and slowed down . Either a solid or a liquid .

## Q3.Write down the applications of Flamephotometery?

## Answer : Application of Flame photometer :

- Flame photometer has both quantitative and qualitative application.
- Na+ and k+ ions in, muscles and heart can be determined by diluting the blood serum and aspiration into the flame .
- Used in determination of calcium and magnesium in cement .
- Used in determination of lead in petrol .
- To estimate sodium , potassium , calcium , lithium etc . Level in sample of serum , urine CSF and other body fluids.

## Q4.Explain the components of Centrifuge

**Answer : Centrifuge :** is a kind of equipment that is generally driven by the electronic motor that help put an object in rotation around a fixed axis .

**Components of centrifuge:**

- **Shields.** Cylindrical metal cub into which tube are fixed
- **Trunnion ring.** Metal rings with bar-like extensions on two opposing ends through which the shields are placed, holding them in position while allowing them to swing up and outward once the centrifuge is in motion.
- **Rubber cushions.** Rubber pads placed at the bottom of the shields, provide protective medium for the tube and prevent breakage during centrifugation.
- **Drive mechanism.** The source of the rotary motion, either electric motors or air or oil turbines, depending upon the type of centrifuge that turns the shaft.
- **Rotor.** Rotory component of centrifuge which rotate centrifuge to very high speed.

## Q5. write note on Water bath?

**Answer : water bath :** A water bath is laboratory instruments. It is a container or vessel filled with heated water . The temperature of water is maintained at a constant level .

- It also prevent excessive evaporation of the fluid being heated.
- Available in range of capacities from 2 litter to 28 litter

**Application of water bath :** water bath is used medical laboratory to incubate specimen in water kept at a constant temperature e.g microbial haematology immunology .

Coagulation tests. Blood banking the ( thawing fresh frozen plasma ) .

**Uses of water bath :-**

- It provide indirect heat .
- Used for warming blood bag blood .
- Used for incubation of test such as PT APTT and coombs test .

**Components of water bath :**

- **Electric elements :** to heat the water contained in the trough.
- **Thermometer :** to monitor the temperature ( placed separately in the through.
- **Thermostat :** to maintain the temperature at a constant level .
- **Stirrer:** it is used to circulate the water throughout the trough to order in maintain uniform temperature .
- It is used to circulate the water throughout the trough in order to maintain uniform temperature.

## Q6.Explain the types of centrifuge ?

**Answer :** : **TYPES OF CENTRIFUGES :**

There are the following types of centrifuges

**LOW SPEED CENTRIFUGE:** It is used to centrifuge routine sedimentation of heavy metal.

low speed centrifuge has maximum speed of 4000 _ 5000 RPM.

It is used for sedimentation of red blood cells.

**HIGH SPEED CENTRIFUGE :**

The high speed centrifuge has maximum speed of 15,000 _ 20,000RPM.

High speed centrifuge are used In more sophisticated biochemical application , higher speed and temperature control of the rotor chamber are essential

**ULTRACENTRIFUGE** :

Ultracentrifuge has a maximum speed of 65,000RPM.

Intense heat is generated due to high speed this the spinning chambers must be refrigerated and kept at a high vacuum

It is used for bath preparative work and analytical work.