

Name.FAzal Subhan

ID.14975

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Paper.Biomedical instrumentation

Ans 1 .

Microscope.the word microscope is come from Greek word

Micro mean small and scopian mean to see.

Def. the instrument which can magnify object more several time then our nacked eye.

Or. The microscope is an optical instrument which uses a lense or more then one lens to produce a highly magnified image of the small specimen.

- **Principle of microscope:**

### **1.Magnification**

To increase in amage of an object is called magnification.

Or . The ability of microscope to enlarge the image of an object is called magnification.

. The magnification power of light microscope is 1500 multiple by 4.

### **2.Resolotion.**

The ability of microscope to show a separate of image of an object is called rsolotion.

.The resoliting power of microscope is 0.2um.

### **3.Contrast.**

The ability to differentiate in the light intensity between the image and also the backward intensity to produce the detail visible to the human eye.

**Ans no 2.**

## **Chromatography.**

### **Meaning.**

The word means chroma / colour.

Graphy means trace or plot or measure or to Draw up.

- **History.**

.In 19<sup>th</sup> century Dr.Mikhail develop a system which is just similar to the paper chromatography.

.The separation technique for the complete or efficient separation of number of the components which is present in the mixture which maybe Include protein Amino acid,lipids and also the drugs.

- **Principle of chromatography**

The principle of chromatography having the two phase which are given below.

### **1.Mobile phase.**

The phase of the chromatography in which the solvent which carries the analyte or sample.

### **2.Sationary phase.**

The substance on which the attach of adhesion or adsorptions of analyte takes place.

**Ans no 3.**

**Application of Flamephotometry.**

It is a photoelectric flame which is used in inorganic chemical analysis to determine the concentration of the specific metal ion, among them sodium, potassium, lithium and calcium.

**Application.**

1.It can be used to estimate sodium, potassium, calcium, lithium etc level in the sample of serum,urine,CSF and also other body fluid.

2.Also useful in the determination of alkali and alkaline earth mentals.

3.Also used in determination of lead.

4. Used in the ion exchanging resin.

5. Used in determination of CA and mg.

**Ans no 4.**

**Component of centrifuge.**

There are some important component of centrifuge which function/work in a co – manner.

### **1.Roter:-**

The router is head of centrifuge.

### **2.Drive shaft:-**

It have very important function in the centrifugal pump to transmit the input power.

### **3.Motor:-**

It have the ability to provide the power of rotation.

### **4. Hanging bucket:-**

It hang the tube.

### **5. Power switch:-**

ON/OFF

### **6. Timer:-**

### **7. Tochrometer:-**

It have ability to check the speed of the centrifuge.

### **8. Brake:-**

**Ans no 5:-**

**Water Bath:-**

The water bath is a device which used in laboratories to incubate the sample in water maintained with a constant temperature.

**Explanation:-**

- It must keep in mind that the water Bath can permit the occurrence of a specific period at a constant temperature upto 100c for the longer period.
- The water bath involved from a sample heated vessels and an instrument.

**Capacities:-**

The water is available in range of capacities from 2 liters to 28 liters. . The water Bath can also prevent the excessive evaporation of a fluid which is heated.

**Principles:-**

The water bath is based on a specific principle that water can constantly agitated by stirrer and then heated with the temperature of the liquid medium which is maintained through the thermostat which can keep a constant and steady level.

**Application:-**

The most important use of water bath is in medical laboratories to incubate the specimens in water bath at a constant temperature.

## **Example**

Used in microbial , Immunology , hematology , coagulation test, blood banking ( the thawing fresh Frozen plasma).

.In microbiology ( in incubate battle of culture).

## **Component:-**

1. Vessels or through insulated metal.
2. Electric element.
3. Propeller or stirrer.
4. Thermamametet.
5. Thermostate.

## **Ans no 6:-**

### **Types of centrifuge:-**

There are some specifial types of centrifuge which are given below.

1. Small bench centrifuge;- having very low speed.
2. large capacity refrigerated centrifuge.
3. Ultra capacity centrifuge:- The parparative ultra centrifuge which is mostly used for separating partical according to their densities.
4. Analytical centrifuge:- The type of centrifuge which having high speed spinning used in molecular biology.

### **Types of rotors**

- 1.** Swinging bucket rotor.
- 2.** Fixed angle rotor.
- 3.** Vertical tube rotor.

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