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Q No # 1

Ans.: Magnification:- To enlarge the image

z) The ability to make small objects seem larger such as making a microscopic organism visible.

Resolution:- Resolution is the ability to distinguish two objects from from each other.

z) The resolution power of human eye is 0.25 mm.

Q No # 2

Ans: Component of microscope:

Following are the component of microscope.

- (i) Head: houses the optical parts in the upper part of the microscope.
- (ii) stage clips: used when there is no mechanical stage the viewer is required to move the slide.
- (iii) Aperture: - is the whole in the stage through which the base light reach the stage.
- (iv) Condenser: focus light on the sample.
- (v) Knobs: - coarse adjustment knob, control up and down movement of stage.
- (vi) Objective Lens: 3-4 lens with magnification power 4x scanner 10x lower price and high power 50x.

(vii) Diaphragm:- control the concentration and size of light.

(viii) nose piece:- contain objective lens 3-4
can easily rotate to change magnification

(ix) stage clip:- grip the slide

(x) eye piece:- contain uni-ocular or Bi-ocular lens
produced magnifying power (10x-50x)

Q NO# 3

Ans: Flame photometry: is a device used in inorganic chemical analysis to determine the concentration of certain metal ions i.e. sodium, potassium, lithium and calcium.

→ metal are quite sensitive to Flame photometry due to excitation energies.

→ The instrument is based on the earlier work done by German scientist Robert Bunsen and Gustav Kirchhoff in 1860

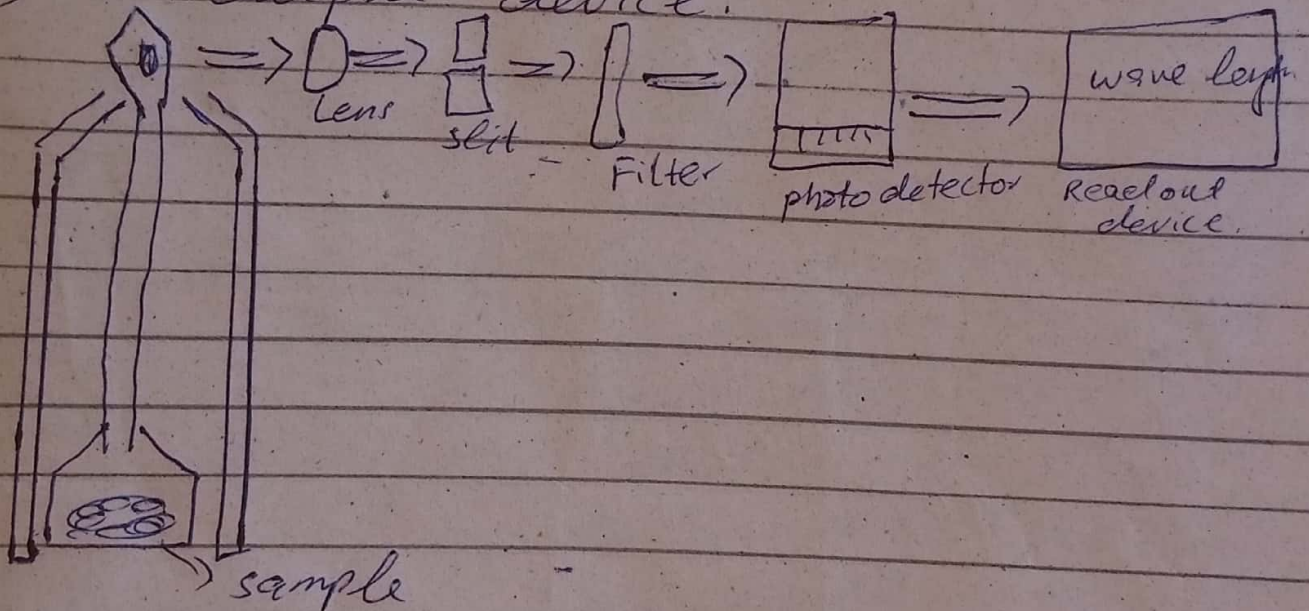
principle:

It is controlled flame test with the intensity of flame colour quantified by photoelectric circuitry. The intensity of the colour will depend on energy that had been absorbed by atom. the atom produced will be further excited to high energy level. when these electron come back to their lower orbit. they become excited and emits energy in the form of wave length.

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Components:

- ⇒) Nebulizer
- ⇒) Lens (Reflector)
- ⇒) Filter (mono chromator)
- ⇒) photo detector
- ⇒) Read out device
- ⇒) Burner
- ⇒) output device.



Applications-

- ⇒) used for soil analysis
- ⇒) in the beverage industry, (soft drink and fruit juice can be analyzed by using flame photometry.
- ⇒) use for quantitative estimation of electrolyte.

Q NO# 4

Ans:

Centrifuge: History: 1923 Theodore Svedberg developed centrifuge to separate the particles from each other.

⇒ It became quickly a laboratory

Tools

⇒ used to identify sub unit of hemoglobin in 1930.

Definition: Centrifuge is a laboratory device that is used for the separation of fluid, gas based on density. Separation is achieved by spinning a vessel containing material at high speed.

OR

centrifuge is a device that rapidly spin.

Uses:-

⇒ use to separate blood component, serum and urine sedimentation.

⇒ use of hematology lab for PCV determination.

⇒ Remove protein participate from sample

⇒ Isolation of macromolecule such DNA, RNA

and protein and liquid

- Remove cellular element from blood
- concentrate cellular element for microscope.

Q No # 5

Ans:- **Chromatography:** chromatography was first developed by Russian botanist Mikhail Tswett in 1903 which produced a colorful separation of plant pigment through a column calcium carbonate.

=> chromatography is a separation technique, useful separation of a number of components present in nature.

principle:- chromatography is based on the principle where molecules in mixture applied onto the surface or into the solid, and fluid stationary phase (stable phase) is separating from each other while moving with aid of mobile phase.

Three components thus form

- (i) stationary phase: This phase is always composed of a "solid" phase
- (ii) mobile phase: this phase is always composed of liquid or gaseous component.
- (iii) separated molecule: the interaction between the stationary phase, mobile phase and substance contained

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17) the mixture is the basic component effective on the separation of molecule from each other.

Types of chromatography

planer chromatography

⇒ separate zone appear as individual spots

⇒ is a stationary phase being support on the interest of a paper and the mobile phase is capillary action.

⇒ Different compound in the sample mixture travel different distance according to how strong they are interacting with stationary phase compare to mobile phase.

column chromatography.

⇒ Deduct the separate zone of the solute.

⇒ stationary phase which occur in the narrow tube through which the mobile phase is focus under pressure or gravity.

⇒ zone appear as peak.

Q NO # 6

Ans: Water Bath:- is a laboratory equipment made from container filled with heated water.

It is used to incubate sample in water at constant temperature over long period of time.

Component of water Bath:

(i) **vessel:** is insulated metals are usually made up of stainless steel.

(ii) **Thermostat:** is maintained the temperature at uniform level in a water bath.

(iii) **electric element:** to heat the water contained in the vessels, electric element is used.

(iv) **Thermometer:** is used to gauge temperature, placed separately in the vessels.

(v) **propellor:** In order to maintain a constant temperature water is circulated through propeller.