

16/mhs01/241  
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## WHAT IS A LIGHT MICROSCOPE?

A light microscope is an instrument that uses visible light and magnifying lenses to examine small objects not visible to the naked eye, or in finer detail than the naked eye allows. They use lenses to focus light on the specimen, magnifying it thus producing an image. The specimen is normally placed close to the microscopic lens.

## PRINCIPLE OF A LIGHT MICROSCOPE.

The light microscope operates on a principle that light energy will pass through and around a thin object, such as a microorganism, and, with the aid of lenses, form a magnified impression on the visual sensory layer of the eye.

## TYPES OF LIGHT MICROSCOPE.

There are two types of light microscope

- Compound microscope.
- Stereo microscope.

## PARTS OF A LIGHT MICROSCOPE AND THEIR FUNCTIONS.

**Eyepiece:** The function of the eyepiece in a microscope is to convert the real- enlarged-intermediate-image from the objective into an enlarged-virtual-image.

**Lens tube:** It is connected to the eyepiece and it holds the eyepiece.

**Objective revolver:** Used to choose lens with desired magnification.

**Objective lens:** It collects light rays that are reflected from the observed object, and generates a real optical image.

**Stand:** It is connected with all the components and holds them together.

**Clip:** It holds the slide in place.

**Microscope stage:** It is where the slide is placed for viewing.

**Condenser:** It bundles the rays from the light source, so they are projected equally on the object to be viewed.

**Fine adjustment knob:** Regulates the distance between the object and objective, to achieve the necessary sharpness.

**Coarse adjustment knob:** Regulates the difference between the object and the objective

**Diaphragm:** It adjusts the diameter of the light ray from the light source, to prevent the object from being outshined or under-shined.

**Light source:** It evenly illuminates the object.

Q2. WRITE NOTES ON THE FOLLOWING BIOMEDICAL EQUIPMENTS, ADD NOTES ON: PRINCIPLE, BRAND, CARE AND MAINTENANCE, COST.

## CENTRIFUGE

A centrifuge is a piece of equipment that puts an object in rotation around a fixed axis, applying a force perpendicular to the axis of spin that can be very strong.

## PRINCIPLE

The centrifuge works using the sedimentation principle, where the centrifugal acceleration causes denser substances and particles to move outward in the radial direction. At the same time, objects that are less dense are displaced and move to the center.

BRAND: NuWind NU-C200R.

## CARE AND MAINTENANCE.

1. Always place the centrifuge on a flat surface first.
2. Always unplug the power cord before cleaning.

3. Emergency phone numbers and procedures should be posted and kept up to date.
  4. Wear disposable gloves.
  5. Follow your facility's safety procedures when cleaning and disinfecting the centrifuge.
  6. Before moving the centrifuge to a new location, the exterior and interior surfaces should be cleaned and disinfected.
  7. Plug in centrifuge only when completely dry.
- COST: \$4,742.

### AUTOMATIC TISSUE PROCESSOR

A tissue processor is a device that prepares tissue samples for sectioning and microscopic examination in the diagnostic laboratory.

#### PRINCIPLE:

The tissue basket oscillates up and down in each station at three-second intervals to ensure thorough and even mixing of the reagents and optimum tissue infiltration.

Infiltration time is separately programmable for each station. Up to nine programs may be run with immediate or delayed starting times.

When it's time for tissue to be transferred to the next beaker or jar, the cover of the machine is raised up, and the lifting mechanism carefully removes the tissue basket and gently transfers it to the next beaker.

When the infiltration time for any particular station is exceeded, a warning message will display, indicating the station number and excess time. Controls are arranged by functionality with an LCD to indicate operational parameters. Reagent container lids have seals to minimize operator exposure to hazardous fumes.

Tissue basket immediately immerses in a station in the event of power loss to protect samples from drying out. When power is restored, program will resume. In the event of long-term power failure, wax is liquified. Capacity of tissue basket is 80 cassettes.

Vacuum configurations hasten infiltration, allowing pressure to be applied to any station in either manual or automatic operation. Fume control configurations extract fumes with a fan and pass them through an internal carbon filter.

BRAND: KD-TS6A.

#### CARE AND MAINTENANCE.

1. Clean the instrument on a daily.
2. Mop up spilled reagents immediately.
3. Preventive maintenance should be done once a year.
  4. Switch off when not in use.
  5. Change reagents when necessary.

COST: \$12, 800.

### MICROTOME

A microtome is a tool used in histopathology to cut extremely thin slices of tissue from tissue blocks, known as sections.

#### PRINCIPLE:

Microtome is a sectioning instrument that allows the cutting of extremely thin slices of a material known as section. Microtomes are used in microscopy, allowing for the preparation of sample for observation under transmitted light or electrons radiation.

BRAND: DiaPath Galileo Automatic Microtome.

#### CARE AND MAINTENANCE.

- A. Do not leave the microtome unattended with an exposed knife/blade in position. Remove the knife/blade, or cover with the guards or visor provided.
- B. Do not leave unboxed knives/blades lying around. Place knives/blades that are not in use in their boxes or packets.
- C. Do not carry knives/blades unless secure in the box or packet provided.
- D. Do not clean the knife/blade along its length. Wipe the knife/blade from the back edge to the cutting edge.
- E. Remember that even used knives and blades are dangerous. They are still sharp and may have been used to cut potentially infectious specimens.
- F. Dispose of used knives and blades with the same care as other sharp objects. On no account should used knives or blades be placed in waste bins.
- G. Clean microtome after every use. Always cover after use to protect from dust/liquid.

COST: \$3,800.