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Aim :-

To study different parts of compound microscope.

Reference :-

Requirement :-

A compound Microscope.

Theory :-

Real and magnified images of minuscule particles or objects can be achieved using a combination of lenses. A compound microscope is an intricate gathering of a combination of lenses that renders a highly maximized and magnified image of microscopic living entities and other complex details or tissues and cells.

Parts of compound microscope :-

The parts can be categorized into :

- Mechanical parts
- Optical parts

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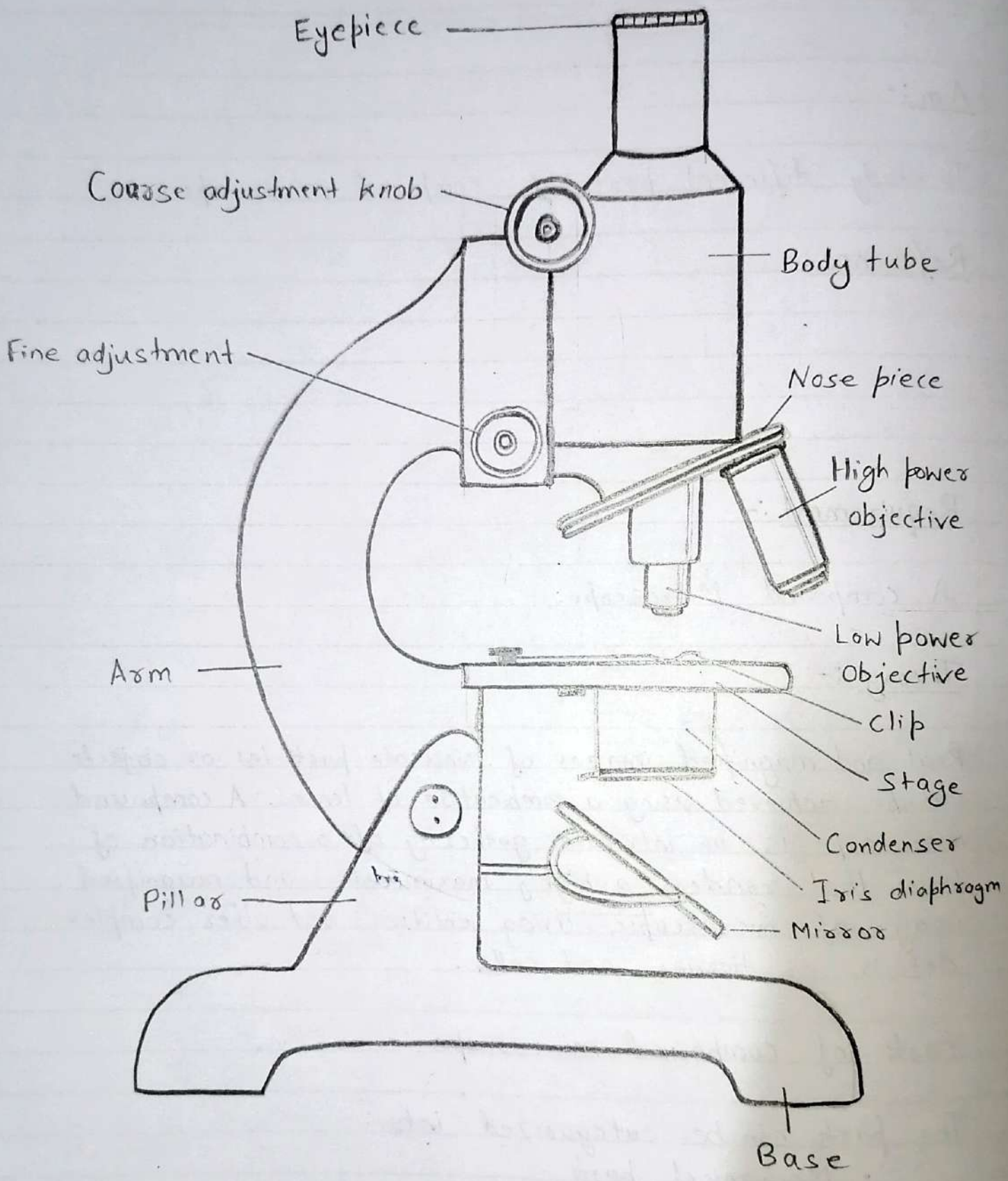
Eyepiece
Coarse adjustment knob
Body tube
Fine adjustment
Nose piece
High power objective
Low power objective
Arm
Clip
Stage
Condenser
Iris diaphragm
Pillar
Mirror
Base

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(A) Mechanical Parts of a Compound Microscope.

1. Foot or base

It is a U-shaped structure and supports the entire weight of the compound microscope.

2. Pillar.

It is a vertical projection. This stands by resting on the base and supports the stage.

3. Arm

The entire microscope is handled by a strong and curved structure known as the arm.

4. Stage.

The flat and rectangular plate that is connected to the arm's lower end is called the stage. The specimen is placed on the stage for studying and examining the various features. The centre of the stage has a hole through which light can pass.

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5. Inclination joint.

It is a joint, wherein the arm is fastened to the compound microscope's pillar. The microscope can be tilted using the inclination joint.

6. Clips

The upper part of the stage is connected to two clips. The slide can be held in its position with the help of the clips.

7. Diaphragm

The diaphragm is fastened below the stage. It controls and adjusts the intensity of light that passes into the microscope. The diaphragm can be of two types:

- Disc diaphragm
- Iris diaphragm.

8. Nose piece.

The nose piece is circular and a rotating metal part that is connected to the body tube's lower end. The nose piece has three holes wherein the objective lenses are embedded.

9. Body tube.

The upper part of the arm of the microscope comprises a hollow and tubular structure known as the body tube. The body tube can be shifted down and up using the adjustment knobs.

10. Fine adjustment knob

It is the smaller knob, which is used for sharp and fine focusing of the object. For accurate and sharp focusing, this knob can be used.

11. Coarse adjustment knob.

It is a large knob that is used for moving the body tube down and up for bringing the object to be examined under exact focus.

(B) Optical Parts of compound Microscope.

1. Eyepiece lens or Ocular.

At the top of the body tube, a lens is planted which is known as the eyepiece. On the rim of the eyepiece, there are certain markings such as 5x, 10x, 15x, etc. These indicate the magnification power. The object's magnified image can be observed with the help of an eyepiece.

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2. Mirror

A mirror is found attached with the pillar or the lower end of the arm. It consists of a concave mirror on one side and a plain mirror on the other side. It can be used for reflection of light rays into the microscope.

3. Objective lenses

At the bottom of the body tube, there are two objective lenses, which are connected to the revolving nose piece. The three objective lenses are as follows:

- Oil immersion objective - 100X
- High power objective - 45X
- Low power objective - 10X.

Working Mechanism of The compound Microscope:

- View into the eyepiece. Rearrange the mirror such that adequate light passes into the microscope.
- The mirror, lenses, stage, and slides should be cleared of dust and be clean.
- Place the slide in the middle of the stage.

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- Firmly secure the slide with clips at two edges of the slide to ensure that the slide cannot move.
- The nose piece is adjusted in such a way that the low power objective is aligned with the object of focus placed on the slide.
- The coarse adjustment knob can be shifted upwards or downwards such that the slide is well under focus.
- Turn the fine adjustment knob by moving upwards or downwards to get a clear and sharp image of the object under focus.
- All minute details of the object are observed under low power objective. Necessary diagrams are sketched.
- The nose piece is now turned to bring the high power objective aligning with the object. The fine adjustment knob is tuned as much as possible to get a bright and precise view of the object.
- In high power, the details of the object are observed. Draw the necessary diagrams. The coarse adjustment knob should not be used when the object is being examined in high power as it can crush the slide.

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Result :-

The experiment to study the different parts of a compound microscope was successfully studied.

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