

Victoria Shuster
Exercise 3- Review Sheet
The Microscope

1. A. Ocular lenses
B. Arm
C. Rotating nosepiece
D. Objective lenses
E. Mechanical stage
F. Stage
G. Condenser
H. Iris diaphragm lever
i. Condenser knob
J. Coarse adjustment knob
K. Substage light
L. Fine adjustment knob
M. Light control
N. Base

2. Explain the proper technique for transporting the microscope

When transporting the microscope hold it in the upright position with one hand on its arm and the other supporting the base

3. Each of the following statements is either true or false. if true write *T* on the answer blank. If false, correct the statement by writing on the blank the proper word or phrase to replace the one that is underlined.
 - A. False- grit- free- lens paper microscope lens may be cleaned with any soft tissue
 - B. False- lowest power obj The microscope should be stored with the oil immersion lens in position over the stage
 - C. True when beginning to focus, use the scanning objective lens
 - D. False- away when focusing on high power always use the coarse adjustment knob to focus
 - E. False- with wet mounts a coverslip should always be used with wet mounts

4. Match the microscope structures in column B with the statements and come and identify or describe them

- A. **(i)** stage- platform in which a slide rests for viewing
- B. **(D)** Iris diaphragm lever- used to adjust amount of light passing through the specimen
- C. **(E)** mechanical stage- controls the movement of the slide on the stage
- D. **(B)** condenser- delivers a concentrated beam of light to the specimen
- E. **(C)** fine adjustment knob- used for precise focusing once initial focusing has been done
- F. **(F)** nosepiece- carries the objective lenses; rotates so that the different objective lenses can be brought into position over the specimen

5. Defined the following terms

Total magnification- an image that is erect and appears to be where it is not

Resolution- ability to discriminate two closely situated objects as separate

Viewing objects through the microscope

6. Complete or respond to the following statements

- A. *Working distance* - The distance from the bottom of the objective lens to the surface of the slide is called the _____
- B. *To the left*- assume there is an object on the left side of the field that you want to bring to the center (that is, toward the apparent right) in what direction would you move your slide?
- C. *Field*- The area of slide scene when looking to the microscope is the _____
- D. *95*- if a microscope has a 10X ocular lens and the total magnification is 950X the objective lens in use at a time is _____
- E. *To provide more contrast*- why should the light be dimmed when looking at living cells
- F. *Parfocal*- if, after focusing in low power, you need to use only the fine adjustment to focus assessment at the higher powers in the microscope it said to be _____
- G. *0.75mm* - you are using a 10X ocular and a 15X objective, and the field diameter is 1.5 MM the approximate field size with a 30X objective is _____
- H. *0.4mm*- if the diameter of the lower field is 1.5 MM, an object that occupies approximately a third of that field has an estimated diameter of _____

7. ?

8. ?

9. Say you were observing an object in the low power field. When you switch to high power it is no longer in your field of view. Why might this occur? **Because in low power you have a wider field of view and when you switch to a higher power it narrows your view and it becomes out of focus**

What should you do initially to prevent this from happening? **Center the object you want to view as much as possible before switching to a higher power and increase the magnification slowly**

10. Do the following factors increase or decrease as one moves to higher magnification with the microscope

Resolution - **increase**

Working distance- **decrease**

Amount of light needed- **increase**

Depth of field- **decrease**

11. A student has the high power lens in position and appears to be intently observing the specimen. The instructor, noting a working distance of about 1 cm, knows the student isn't actually seeing the specimen. How so? **A high-dry lens is a high power, non-oil immersion lens. Looking at dust and it's out of focus**

12. Describe the proper procedure for preparing a wet mount
 1. **The object is placed in a drop of water on a clean slide**
 2. **A cover slip is held at a 45° angle with the fingertips**
 3. **It is lowered carefully over the water and the object**
13. Indicate the probable cause of the following situations during use of a microscope
 - A. Only half of the field is illuminated- **blockage in the light path**
 - B. The visible field does not change as the mechanical stage is moved- **mechanical contact between the specimen and the objective lens**
14. A blood smear is used to diagnose malaria. In Patients with malaria, the protozoa can be found near and inside red blood cells. Explain why a microscope capable of high magnification and high resolution would be needed to diagnose malaria. **Structures inside a cell including protozoa are very small and cannot be seen with low magnification**
15. Histopathology is the use of microscopes to view tissues to diagnose and track the progression of diseases. Why are thin slices of tissue ideal for this procedure. **Thin slices are used so that pathologists can clearly see individual cells for their assessment. Too many layers of cells make it difficult to focus and hard to see what changes have occurred in the tissues**