EXERCISE 3

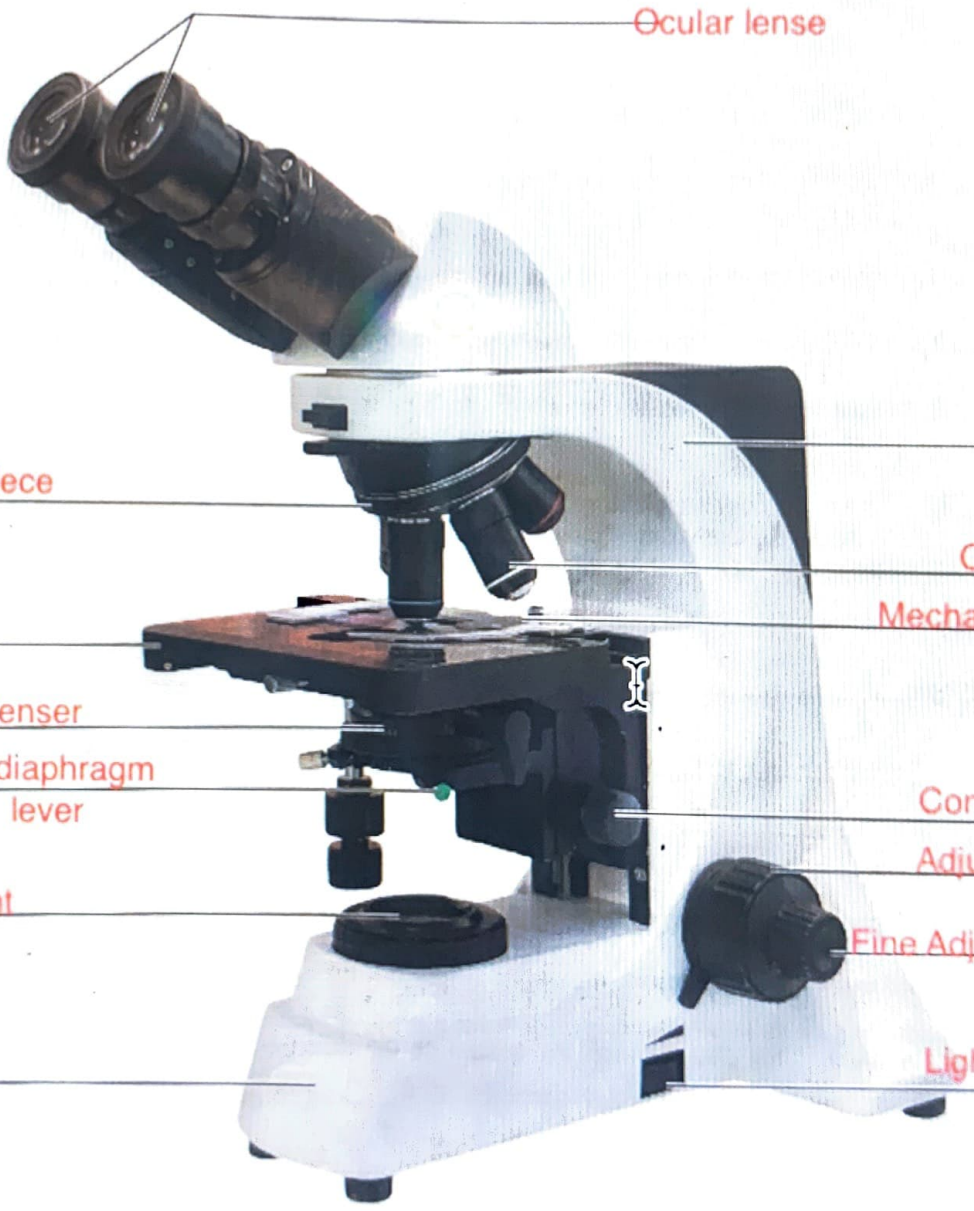
REVIEW SHEET
The Microscope

Instructors may assign a portion of the Review Sheet questions using Mastering A&P™

Name Shani Daniel Lab Time/Date _____

Care and Structure of the Compound Microscope

1. Label all indicated parts of the microscope.



2. Explain the proper technique for transporting the microscope.

Holding the microscope upright with one hand on the arm and another hand on 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.

grit free lense paper 1. The microscope lens may be cleaned with any soft tissue.

lowest power objective 2. The microscope should be stored with the oil immersion lens in position over the stage.

Lowest power 3. When beginning to focus, use the scanning objective lens.

Fine 4. When focusing on high power, always use the coarse adjustment knob to focus.

T 5. A coverslip should always be used with wet mounts.

4. Match the microscope structures in column B with the statements in column A that identify or describe them.

Column A

I 1. platform on which the slide rests for viewing

B 2. used to adjust the amount of light passing through the specimen

E 3. controls the movement of the slide on the stage

D 4. delivers a concentrated beam of light to the specimen

C 5. used for precise focusing once initial focusing has been done

F 6. carries the objective lenses; rotates so that the different objective lenses can be brought into position over the specimena.

Column B

a. coarse adjustment knob
b. condenser
c. fine adjustment knob
d. iris diaphragm lever
e. mechanical stage
f. nosepiece
g. objective lenses
h. ocular lens
i. stage

5. Define the following terms.

total magnification: To figure the total magnification of an image that you are viewing through the microscope is really quite simple.

resolution: The minimum distance at which two distinct points of a specimen can still be seen.

Viewing Objects Through the Microscope

6. Complete, or respond to, the following statements:

Working distance 1. The distance from the bottom of the objective lens to the surface of the slide is called the _____.

To the right 2. 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? _____.

Field 3. The area of the slide seen when looking through the microscope is the _____.

95 4. If a microscope has a 10× ocular lens and the total magnification is 950×, the objective lens in

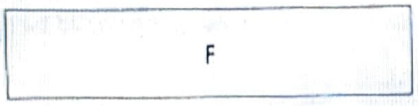
Increase the contrast 5. Why should the light be dimmed when looking at living (nearly transparent) cells?

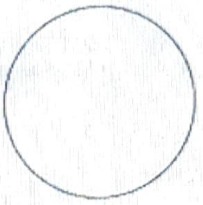
Parfocal 6. If, after focusing in low power, you need to use only the fine adjustment to focus the specimen at the higher powers, the microscope is said to be _____.

.75 7. You are using a 10× ocular and a 15× objective, and the field diameter is 1.5 mm. The approximate field size with a 30× objective is _____ mm.

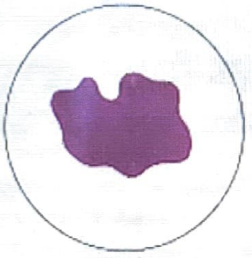
.5 8. If the diameter of the low-power field is 1.5 mm, an object that occupies approximately a third of that field has an estimated diameter of _____ mm.

7. You have been asked to prepare a slide with the letter *F* on it (as shown below). In the circle below, draw the *F* as seen in the low-power field.





8. Estimate the length (longest dimension) of the object in μm.



Total magnification = 100×

Field diameter = 1.6 mm

Length of object = 1067 μm

9. Say you are 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? It's going to occur because when you change to a higher power the focus will get narrow and the object will get out of focus.

What should you do initially to prevent this from happening? Center your object

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

resolution: Increase amount of light needed: Increase

working distance: Decrease 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? _____

12. Describe the proper procedure for preparing a wet mount.

Text

13. Indicate the probable cause of the following situations during use of a microscope.

a. Only half of the field is illuminated: The lense isn't in the right position

b. The visible field does not change as the mechanical stage is moved: The slides could be ... in the objective lense

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.

The microscope is needed because the protozoa is too small to be seen by just the naked eye.

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 ideal because the thinner the slice the easier it is to see and for the light to pass through.