

## Microscope Questions

Name: \_\_\_\_\_

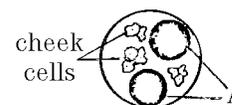
Date: \_\_\_\_\_

1. The internal structure of a mitochondrion and a chloroplast can best be observed by using
  - A. an ultracentrifuge
  - B. a compound light microscope
  - C. microdissection instruments
  - D. an electron microscope
  
2. A microscope is supplied with  $10\times$  and  $15\times$  eyepieces, and with  $10\times$  and  $44\times$  objectives. What is the maximum magnification that can be obtained from this microscope?
  - A.  $59\times$
  - B.  $150\times$
  - C.  $440\times$
  - D.  $660\times$
  
3. To view cells under the high power of a compound microscope, a student places a slide of the cells on the stage and moves the stage clips over to secure the slide. She then moves the high-power objective into place and focuses on the slide with the coarse adjustment. Two steps in this procedure are incorrect. For this procedure to be correct, she should have focused under
  - A. low power using coarse and fine adjustments and then under high power using only the fine adjustment
  - B. high power first, then low power using only the fine adjustment
  - C. low power using the coarse and fine adjustments and then under high power using coarse and fine adjustments
  - D. low power using the fine adjustment and then under high power using only the fine adjustment

4. In a biology laboratory, four compound light microscopes were set up with prepared wet mount slide of stained onion skin tissue on each stage. The chart here shows the objective and ocular magnification for each microscope. In which microscope's field of view would the greatest number of stained onion cells most likely be observed?

Microscope	Ocular	Objective
1	$5\times$	$10\times$
2	$5\times$	$20\times$
3	$10\times$	$40\times$
4	$10\times$	$50\times$

- A. 1
  - B. 2
  - C. 3
  - D. 4
  
5. While focusing a microscope on high power, a student crushed the cover slip. The student probably
  - A. closed the diaphragm
  - B. turned up the light intensity
  - C. rotated the eyepiece
  - D. used the coarse adjustment
  
6. The diagram shown represents the view of a stained wet mount of human cheek cells prepared by a student and observed under low power of a compound light microscope. What do the dark-rimmed circles labeled A represent?
  - A. nuclei
  - B. red blood cells
  - C. air bubbles
  - D. chloroplasts

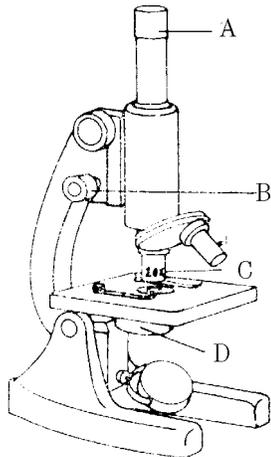


7. A student viewing a specimen under low power of a compound light microscope switched to high power and noticed that the field of view darkened considerably. Which microscope part should the student adjust to brighten the field of view?

- A. diaphragm                      B. coarse adjustment  
C. find adjustment                D. eyepiece

8. If the ocular (eyepiece) of this microscope is marked  $10\times$ , what is the greatest total magnification of this microscope?

- A.  $100\times$   
B.  $200\times$   
C.  $1000\times$   
D.  $2000\times$



9. The low-power diameter of the field of a microscope is determined to be 1.5 millimeters. A slide of onion skin cells is put on the stage, and exactly 3 cells can be counted lengthwise across the diameter of the field. The average length of each cell is

- A.  $100\mu\text{m}$                       B.  $500\mu\text{m}$   
C.  $750\mu\text{m}$                       D.  $1,500\mu\text{m}$

10. Which is the correct sequence of historical developments leading to our present knowledge of cells?

- A. electron microscope  $\rightarrow$  cell theory  $\rightarrow$  compound light microscope  
B. compound light microscope  $\rightarrow$  cell theory  $\rightarrow$  electron microscope  
C. cell theory  $\rightarrow$  electron microscope  $\rightarrow$  compound light microscope  
D. electron microscope  $\rightarrow$  compound light microscope  $\rightarrow$  cell theory

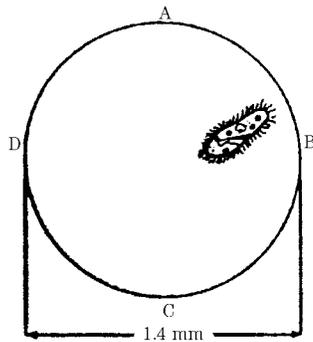
11. What is the highest magnification that can be obtained with a microscope that has a  $10\times$  eyepiece with  $10\times$  and  $43\times$  objectives?

- A.  $43\times$                               B.  $100\times$   
C.  $430\times$                           D.  $4300\times$

12. The total magnification of an image formed by a compound light microscope is a result of the combined magnification of the

- A. eyepiece and diaphragm  
B. objective and mirror  
C. eyepiece and objective  
D. low-power objective and high-power objective

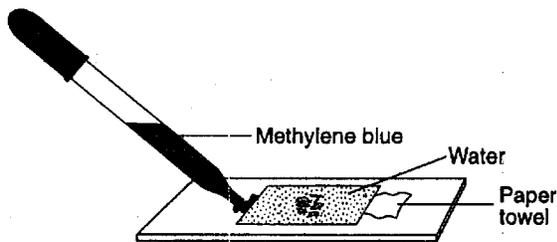
13. The diagram represents an organism viewed with a compound light microscope under low power. The diameter of the field of view is 1.4 millimeters.



This organism could be centered in the field of view by moving the microscope slide in the direction of

- A. A      B. B      C. C      D. D

14. The diagram shown represents a technique used in the preparation of a specimen for observation with a compound light microscope. Which technique is illustrated in the diagram?



- A. testing the specimen for starch  
 B. placing the specimen under the coverslip  
 C. sterilizing the specimen  
 D. staining the specimen

15. Which sequence contains the correct order of steps for a student to follow to observe the nucleus of protozoa in a stained wet mount, using a compound light microscope.

	Begin by using the	Focus using the	Focus using the	Switch to the
(1)	low-power objective →	coarse adjustment →	fine adjustment →	high-power objective
(2)	low-power objective →	fine adjustment →	coarse adjustment →	high-power objective
(3)	high-power objective →	coarse adjustment →	fine adjustment →	low-power objective
(4)	high-power objective →	fine adjustment →	coarse adjustment →	low-power objective

- A. (1)      B. (2)      C. (3)      D. (4)

16. Which paragraph describes the procedure for preparing a stained wet mount of onion epidermis?

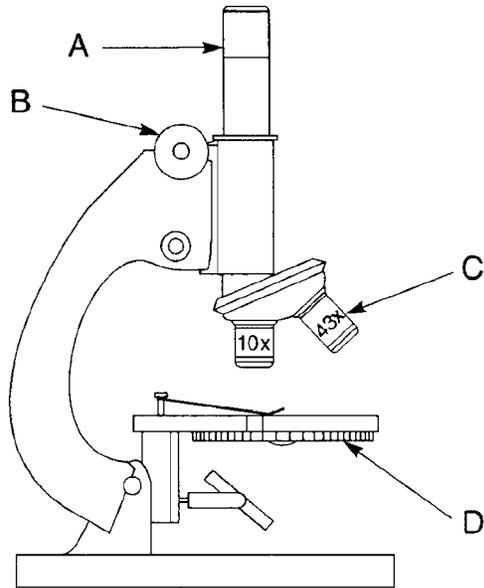
A. Place a slice of onion epidermis on a slide. Add two drops of water and one drop of stain. Cover the slice by dropping a coverslip directly on top of it. Press on the coverslip to force air bubbles out. Add one drop of water to one edge of the coverslip, and add one drop of stain to the opposite edge.

B. Add one drop of stain to a piece of onion epidermis. Using forceps, place the epidermis on a slide. Blot the epidermis with a piece of paper towel to remove the excess stain. Drop a coverslip onto the specimens.

C. Place a piece of onion epidermis on a slide. Add one drop of water. Put one edge of a coverslip in the water drop, then slowly lower the opposite side of the coverslip. Allow the towel to absorb some water so that the stain will move under the coverslip.

D. Add one drop of stain to a slide. Place a piece of onion epidermis on top of the stain. Use a piece of paper towel to absorb the stain. Drop a coverslip on the epidermis to flatten it out. Lift the coverslip and add a drop of water to the epidermis. Replace the coverslip.

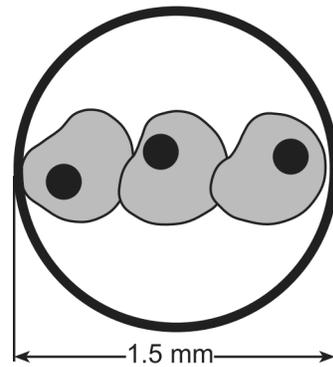
17. A compound light microscope is represented in the diagram.



Which microscope is correctly paired with its function?

- A. *A*—magnifies the image of the specimen
- B. *B*—used for focusing only when the high-power objective is used
- C. *C*—provides the field of view with the largest diameter
- D. *D*—holds the specimen on the stage

18. The diagram below shows three cells in the field of view of a microscope. The diameter of the field of view is 1.5 millimeters.



What is the approximate diameter of each cell?

- A. 50  $\mu m$
- B. 250  $\mu m$
- C. 500  $\mu m$
- D. 4,500  $\mu m$

Microscope Questions      9/30/2017

1.  
Answer:      D
2.  
Answer:      D
3.  
Answer:      A
4.  
Answer:      A
5.  
Answer:      D
6.  
Answer:      C
7.  
Answer:      A
8.  
Answer:      C
9.  
Answer:      B
10.  
Answer:      B
11.  
Answer:      C
12.  
Answer:      C
13.  
Answer:      B
14.  
Answer:      D
15.  
Answer:      A
16.  
Answer:      C
17.  
Answer:      A
18.  
Answer:      C