

Visual Anatomy & Physiology Lab Manual, 2e (Sarikas)

Exercise 2 Care and Use of the Compound Light Microscope

2.1 Pre-lab Questions

1) The _____ controls the brightness of the light emitted from the substage light source.

- A) iris diaphragm
- B) stage
- C) mechanical stage
- D) condenser lens

Answer: A

Learning Outcome: 2.1

Bloom's Taxonomy: Remembering/Understanding

2) The _____ is a revolving structure that holds the objective lenses.

- A) coarse adjustment knob
- B) nosepiece
- C) mechanical stage control knobs
- D) fine adjustment knob

Answer: B

Learning Outcome: 2.1

Bloom's Taxonomy: Remembering/Understanding

3) The total magnification of a specimen can be calculated by multiplying the ocular lens magnification by the _____ lens magnification.

- A) low power
- B) scanning
- C) high power
- D) objective

Answer: D

Learning Outcome: 2.1

Bloom's Taxonomy: Remembering/Understanding

4) The proper way to carry a microscope is in front of your body with one hand gripping the _____ and the other hand supporting the _____.

- A) arm; base
- B) head; stage
- C) objective lenses; base
- D) ocular lenses; arm

Answer: A

Learning Outcome: 2.1

Bloom's Taxonomy: Remembering/Understanding

5) The distance between the objective lens and the microscope stage is called the _____.

- A) mechanical stage
- B) working distance
- C) resolving power
- D) total magnification

Answer: B

Learning Outcome: 2.2

Bloom's Taxonomy: Remembering/Understanding

6) All microscope lenses should be cleaned with _____.

- A) lens paper
- B) tissue paper
- C) paper
- D) paper towels

Answer: A

Learning Outcome: 2.2

Bloom's Taxonomy: Remembering/Understanding

7) If a microscope is _____, then the user will not have to make adjustments to focus the specimen when switching between objective lenses.

- A) compound
- B) binocular
- C) parfocal
- D) monocular

Answer: C

Learning Outcome: 2.2

Bloom's Taxonomy: Remembering/Understanding

8) Inversion of image means that when viewing a specimen with a light microscope, the image that you see will be _____ and _____.

- A) distorted; magnified
- B) magnified; inverted
- C) inverted; reversed
- D) magnified; reversed

Answer: C

Learning Outcome: 2.3

Bloom's Taxonomy: Remembering/Understanding

9) The _____ lens is known as the oil immersion lens.

- A) 4×
- B) 10×
- C) 40×
- D) 100×

Answer: D

Learning Outcome: 2.1

Bloom's Taxonomy: Remembering/Understanding

10) As the user switches to a higher-power lens to increase total magnification, the field of view _____.

- A) decreases
- B) decreases 4×
- C) increases
- D) remains the same

Answer: A

Learning Outcome: 2.5

Bloom's Taxonomy: Applying/Analyzing

2.2 Post-lab Questions

1) Calculate the total magnification of a specimen if the magnification of the ocular lens is 10× and the magnification of the objective lens is 45×.

- A) 450×
- B) 4.5×
- C) 45×
- D) 4500×

Answer: A

Learning Outcome: 2.1

Bloom's Taxonomy: Applying/Analyzing

2) The ability to distinguish close objects as separate and distinct is known as _____.

- A) working distance
- B) field of view
- C) resolving power
- D) depth of field

Answer: C

Learning Outcome: 2.2

Bloom's Taxonomy: Remembering/Understanding

3) The coarse and fine adjustment knobs are used to _____.

- A) nosepiece
- B) make initial and subsequent focusing adjustments when viewing a specimen.
- C) secure the specimen on the stage
- D) illuminate the specimen

Answer: B

Learning Outcome: 2.1

Bloom's Taxonomy: Remembering/Understanding

- 4) As the coarse adjustment knob is turned, the stage (or in some cases the nosepiece) _____.
- A) remains stationary
 - B) moves forward or backward
 - C) moves up or down, depending on the direction that the knob is turned
 - D) moves left or right, depending on the direction that the knob is turned

Answer: C

Learning Outcome: 2.1

Bloom's Taxonomy: Applying/Analyzing

- 5) As the resolving power of the objective lens increases, the working distance _____.
- A) increases
 - B) decreases
 - C) increases by a factor of 10
 - D) remains the same

Answer: B

Learning Outcome: 2.2

Bloom's Taxonomy: Applying/Analyzing

- 6) If the microscope is not parfocal, the user should make focusing adjustments using the _____ adjustment knob when viewing a specimen under high power.

- A) coarse
- B) condenser
- C) stage
- D) fine

Answer: D

Learning Outcome: 2.2

Bloom's Taxonomy: Applying/Analyzing

- 7) To avoid damaging a lens or breaking a slide, the user should always begin viewing a specimen with the _____ power objective lens.

- A) medium
- B) lowest
- C) oil immersion
- D) highest

Answer: B

Learning Outcome: 2.2

Bloom's Taxonomy: Applying/Analyzing

8) If a student uses a parfocal compound light microscope, which of the following would be true?

- A) The focus will have to be adjusted using the mechanical stage control knob.
- B) After the initial focus adjustments are made, the image should remain in focus as the specimen is viewed with each objective lens.
- C) The focus will have to be adjusted using the coarse adjustment knob.
- D) The focus will have to be adjusted using the fine adjustment knob.

Answer: B

Learning Outcome: 2.2

Bloom's Taxonomy: Remembering/Understanding

9) At a total magnification of $100\times$, the diameter of the field of view is 6 mm. If the total magnification is increased to $1000\times$, the diameter of the field of view is _____.

- A) 0.6 mm
- B) 0.06 mm
- C) 60 mm
- D) 600 mm

Answer: A

Learning Outcome: 2.5

Bloom's Taxonomy: Applying/Analyzing

10) Assume a structure within a specimen fills approximately 25 percent of the diameter of the field of view. If the field diameter is known to be 3.5 mm, calculate the size of the structure.

- A) 0.14 mm
- B) 14 mm
- C) 0.875 mm
- D) 0.0875 mm

Answer: C

Learning Outcome: 2.5

Bloom's Taxonomy: Applying/Analyzing