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×, the diameter of the field of view is 6 mm. If the total magnification is increased to 1000×, 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