Quiz 2 covers Appendix A – Page 365: Microscopy and exercise 3 on cell structure and cell division.

1. **The Microscope:** major parts – fig A.1, page 366, especially names and functions, page 367.

2. **4-Basic Rules** – a) support with both hands and cord coiled around arm b) Use only lens paper. Use sweeping motion to clean. Do not use circular or to-and-fro motion c) Microscope must be in lowest power when start using or storing a microscope, and removing or placing a slide from/on a microscope d) Never use coarse adjustment when on high power.

3. **Ocular lens** = Eye-piece – 10X.....X indicates magnification.

4. **Objective lenses** – Low Power = 10X, High Power = 43X and Oil Immersion = 97X

5. **Magnification** = size of the image / size of the object

6. **Low power magnification** (10X * 10X) = 100X; **High Power Magnification** (10X * 40X) = 400X and **Oil Immersion magnification** (10X * 97X) = 970X. Table on Page 366

7. **Focusing:** – images are inverted = both upside down and reverse (left-right). You studied slide ‘e’ for it. When the object or stage moves to right image moves to left and when object or stage moves up the image moves down and vice versa. Low Power focusing is done with Coarse Adjustment and High power focusing is done with Fine adjustment.

8. **Microscope Field:** Page 31 – Determining the size of objects. The total area seen through the objective lens. It is largest under scanning objective lens (4X), large under low power objective (10X) and small under high power objective lens (40X). It is measured as Low Power Diameter (about 1.8mm) and High Power Diameter (about 0.45mm) for your microscope.

9. **Relative working distances:** of the 10X, 45X and 100X objective lenses – Fig A.3

10. **Depth of Field:** It is the horizontal thickness below the objective lens of your microscope where the object is in Sharp Focus. You studied the slide with 3 colored fibers on it. The following table compares the depth of field of 2 objectives.

<table>
<thead>
<tr>
<th>Low power Objective</th>
<th>High Power Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater</td>
<td>Lesser</td>
</tr>
<tr>
<td>far</td>
<td>near</td>
</tr>
</tbody>
</table>

11. **Resolution:** page 368, top left 2nd paragraph. It is the ability to distinguish adjacent objects. It enhances the clarity of an image. The resolution of unaided eye is low. It is higher in case of compound microscope but highest in an electron microscope.
12. **Parfocal**: Compound microscope is in focus at low power magnification and you rotate the nose-piece to high power, microscope should still be almost in focus.

13. **Cheek Cells**: are covered with cell membrane and have a dense nucleus in the center of cell surrounded by cytoplasm. Stain used is Methylene Blue or Iodine solution. The cells stained and studied by you were single cells and were not joined to one another as shown in fig A.5.

14. **Exercise 3**: Study cell structure and cell division mitosis from lecture slides of chapter 3.

15. Study the figures given in text book and refer to table 3.1 in text-book or lab manual for the brief structure and functions of cell organelles. Even if you study mitosis from lab manual you should be OK.

16. I will give you multiple choice questions, give complete type questions from recap done in the class, and show you figures or models to identify and name the parts.

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Do study the lab manual and text book to score 100%. The study guide gives you an idea how to study and will cover majority of questions but not all of them.