Name: _____ Block: __ Date: _____
Chapters 3/4 Review Please complete on separate sheet of paper.

Lab Portion:

1. Why must only fine focus be used with higher magnifications?
2. Why would you choose to use an acid fast stain rather than a gram's stain?
3. What are the two types of scanned probe microscopes and what is the difference between the two?
4. Why do gram negative organisms not retain the crystal violet stain?
5. List the types of special stains and their uses.
6. What are the types of electron microscopes and how do they work (in general).
7. What are the disadvantages and advantages of an electron microscope?
8. What is the refractive index?
9. Explain, in detail, how the gram's staining process works. Including substances, times, and functions.
10. List the range of magnification for the light microscopes and electron microscopes.
11. What type of stain would you use to visualize the capsule of a bacteria?
12. List three ways to fix a specimen to a slide.
13. What is the total magnification for a microscope if the eye piece has a 10x lens and the highest objective lens is 100x?
14. Describe the main shapes of bacteria (cocci, bacilli, spiral and yeast)
15. What does the prefix strepto- indicate?
16. Which type of stain would you used to stain a bacteria with a waxy coat?
17. Why are most bacterial stains basic (pH)?
18. What is a mordant? What is the mordant for the gram's stain?
19. The transmission microscope requires what in order for the organism to be viewed.
20. Describe the function of the decolorizer.
21. List the steps of the gram stain process and the time for each.
22. What microscope is used for specimens suspended in liquids.

Notes Portion:

1. Why are prokaryotes smaller than eukaryotes?
2. What is a fimbriae and what is its function?
3. Explain the endosymbiotic theory.
4. Name three differences between prokaryotes and eukaryotes.
5. How are plasmids and chromosomes the same/different?
6. What is the primary method for bacterial reproduction? How quickly do they reproduce?
7. What is the glycocalyx composed of and what is its function?
8. Why are endospores formed and what kind of cells can form them? What initiates this process?
9. Why are ribosomes the only organelle found in bacteria?
10. Where are the digestive enzymes found in a cell?
11. Describe the main shapes of bacteria (cocci, bacilli, spiral and yeast)
12. What does the prefix strepto- indicate?
13. What is the purpose of the golgi apparatus?
14. What are pili?
15. What evidence supports the theory that eukaryotes were derived from prokaryotic ancestors?
16. What are fimbriae made of and what is their function?
17. What eukaryote is often studied with the prokaryotes?
18. How do prokaryotes reproduce? How frequently?
19. What is a flagella composed of and what is its function?
20. Name 3 characteristics of prokaryotes and 3 for eukaryotes.
21. What microscope is used for specimens suspended in liquids.
22. What are fimbriae made of and what is their function?
23. Describe the differences between prokaryotic and eukaryotic cells.
24. List and describe the extremophiles.
25. What is the process of endospore formation called? What initiates this process?

Be able to describe the structure and function of the following:

Capsule
Cell wall (gram+ and gram-)
Chromosome
Cytoplasm
Endospore
Fimbriae
Flagella (and arrangements)
Glycocalx
Golgi apparatus
Mitochondria
Plasma membrane
Plasmid
Ribosome (both types)

Be able to describe the function/use and specimen requirement for each of the following microscopes:

Compound Light Microscope
Dark-Field Microscope
Differential Contrast Microscope
Fluorescence Microscope
Phase-Contrast Microscope
Scanned Probe Microscope
Scanning Electron Microscope
Transmission Electron Microscope

Be able to discuss/describe the following stains:

Simple Stain – Methylene Blue
Gram's Stain
India Ink
Endospore
Acid Fast