Study Guide for Unit 2

1. Be able to identify microbial relationships and define each.
2. Define infection and infestation
3. Know the steps of infection
4. Be able to define pathogenicity.
5. Define virulence and be able to explain what makes an organism virulent.
6. Know the virulence factors and characteristics of each in detail.
   a. exotoxins
   b. endotoxins
   c. extracellular enzymes
   d. cellular factors
7. Know the definitions of signs, symptoms, and syndrome.
8. Know the terms used to describe infections (fig 14.7).
9. Know the stages of infectious disease and signs and symptoms associated with each sage.
10. Define epidemiology, etiology, morbidity, mortality, endemic, epidemic, and pandemic.
11. Understand the differences between a common source outbreak and a propagated epidemic; include an understanding of John Snow and cholera.
12. Know the different reservoirs of infection.
13. Know the portals of exit and entry in the body.
14. Know the methods of disease transmission and some examples of each (page 414 of the text).
15. How do we control the spread of infectious diseases? How is malaria controlled?
16. Be able to define potential energy and kinetic energy.
17. Understand the first and second law of thermodynamics.
18. Understand and be able to recognize graphs the following reactions; exergonic, endergonic, and coupled.
19. Know all the functions of enzymes, how they work, how they are inhibited, and how and what inactivates them.
20. Know the kinds and definitions of enzyme inhibitors.
21. Be able to define an oxidation/reduction reaction and its relationship.
22. Know the common electron **acceptors** and the **main electron acceptor** (taxi cabs) in catabolism.
23. Know the oxidized and reduced forms of NAD^+/NADH and FAD^+/$FADH_2$.
24. Know the definitions (carbon and energy sources) of an autotroph, heterotroph, phototroph, chemotroph and the combination of each.
25. Know the parts of cellular respiration; glycolysis, pre-Krebs cycle, Krebs cycle, electron transport chain (oxidative phosphorylation), and fermentation. It would be best to diagram this several times on paper.
26. For glycolysis; know what goes into glycolysis and what comes out, what prevents glucose from leaving the cell, how the whole process is regulated (inhibited), and where it takes place.
27. Fermentation; know what goes in and what comes out, the purpose of fermentation on an energy level, location of fermentation, and be able to recognized products of various kinds of fermentation.
28. Pre-Krebs cycle; know what goes in and what comes out and the location in the cell where it occurs.
29. Krebs cycle; know what goes in and what comes out, and location where it occurs in both the cell and the mitochondria.
30. Know the process of the electron transport chain (ETS), where the ETS is located, and the purpose of the ETS.
31. Differentiate between aerobic respiration and anaerobic respiration. (final electron acceptors)
32. Know how and where fat feeds into the metabolic pathway.
33. Know how and where protein feeds into the metabolic pathway.
34. Define metabolism, catabolism, and anabolism.
35. Know the energy source of the cell.
36. Know where chemiosmosis takes place in both eukaryotic and prokaryotic cells, and the final product of chemiosmosis.
37. Be able to sum the amount of energy obtained by oxidizing one molecule of glucose at the catabolic stages; glycolysis, pre-Krebs cycle, Krebs Cycle, and fermentation.
38. Where to the electrons come from in respiration?
39. Where to electrons come from in photosynthesis in plants and oxygen producing organism? In sulfur producing organisms?
40. What happens in the light reactions verses the dark reactions?
41. Where does the light and the dark reactions occur in chloroplasts?
42. Know the types of asexual reproduction.
43. Be able to define generation time/doubling time and growth rate.
44. Be able to diagram a standard growth curve and tell what is happening at each phase.

45. Know briefly what each method for measuring bacterial growth entails.
46. Know the factors affecting bacterial growth and how they affect the growth.
47. Know the definitions of the following: acidophiles, neutrophiles, alkaliphiles, psychrophiles, mesophiles, thermophiles, and where these organisms may be found.
48. Define aerobes, obligate aerobes, facultative anaerobes, anaerobes, obligate anaerobes, microaerophiles, and halophile, and know where these organisms would grow.
49. Know the definition of isotonic, hypotonic, and hypertonic.
50. Know the important nutrient elements. Be able to recognized trace elements and vitamins required for growth.
51. Know the classifications of carbon and energy sources.
52. Know the definition of a spore/endospore and why a cell forms a spore.
53. Know the two kinds of culture media and the characteristics of agar.
54. Know how to obtain a pure culture and define what a pure culture is.
55. Be able to explain and recognize a complex medium and a defined medium.
56. Be able to define and explain the combination of the above media with selective, differential, and enrichment media.
57. Define and explain anaerobic medium and know the name of the example in the notes.