

Study Guide for Unit 2

1. Be able to identify microbial relationship 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 stage.
10. Be able to define potential energy and kinetic energy.
11. Understand the first and second law of thermodynamics.
12. Understand and be able to recognize graphs the following reactions; exergonic, endergonic, and coupled.
13. Know all the functions of enzymes, how they work, how they are inhibited, and how and what inactivates them.
14. Know the kinds and definitions of enzyme inhibitors.
15. Be able to define an oxidation/reduction reaction and its relationship.
16. Know the common electron **acceptors** and the **main electron acceptor** (oxygen) in catabolism.
17. Know the oxidized and reduced forms of NAD^+/NADH and $\text{FAD}^+/\text{FADH}_2$.
18. Know the definitions (carbon and energy sources) of an autotroph, heterotroph, phototroph, chemotroph and the combination of each.
19. Know the parts of cellular respiration; glycolysis, pre-Krebs cycle, Krebs cycle, electron transport chain (oxidative phosphorylation), and fermentation.
20. 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.
21. Fermentation; know what goes in and what comes out, the purpose of fermentation on an energy level, location of fermentation, and be able to recognize products of various kinds of fermentation.
22. Pre-Krebs cycle; know what goes in and what comes out and the location in the cell where it occurs.
23. Krebs cycle; know what goes in and what comes out, and location where it occurs in both the cell and the mitochondria.
24. Know the process of the electron transport chain (ETS), where the ETS is located, and the purpose of the ETS.
25. Differentiate between aerobic respiration and anaerobic respiration. (final electron acceptors)
26. Know how and where fat feeds into the metabolic pathway.
27. Know how and where protein feeds into the metabolic pathway.
28. Define metabolism, catabolism, and anabolism.
29. Know the energy source of the cell.
30. Know where chemiosmosis takes place in both eukaryotic and prokaryotic cells, and the final product of chemiosmosis.
31. 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.
32. Know the types of asexual reproduction.
33. Be able to define generation time/doubling time and growth rate.
34. Be able to diagram a standard growth curve and tell what is happening at each phase.
35. Know briefly what each method for measuring bacterial growth entails.

36. Know the factors affecting bacterial growth and how they affect the growth.
37. Know the definitions of the following: acidophiles, neutrophiles, alkaliphiles, psychrophiles, mesophiles, thermophiles, and where these organisms may be found.
38. Define aerobes, obligate aerobes, facultative anaerobes, anaerobes, obligate anaerobes, microaerophiles, and halophile, and know where these organisms would grow.
39. Know the definition of isotonic, hypotonic, and hypertonic.
40. Know the important nutrient elements. Be able to recognize trace elements and vitamins required for growth.
41. Know the classifications of carbon and energy sources.
42. Know the definition of a spore/endospore and why a cell forms a spore.
43. Know the two kinds of culture media and the characteristics of agar.
44. Know how to obtain a pure culture and define what a pure culture is.
45. Be able to explain and recognize a complex medium and a defined medium.
46. Be able to define and explain the combination of the above media with selective, differential, and enrichment media.
47. Define and explain anaerobic medium and know the name of the example in the notes.