

## MICROBIOLOGY STUDY QUESTIONS - EXAM 2

1. Describe the phases of growth of bacteria in a closed liquid culture system. What is binary fission? What is a continuous culture system and when might it be used?
2. Describe how bacterial growth can be measured by the following methods: spread plate method, pour plate method, filtration method, direct microscopic count, turbidity, and dry weight.
3. Define the following terms related to control of microbial growth: sterilization, disinfection, antisepsis, germicide, bacteriostasis, asepsis, degerming, and sanitation.
4. What are physical methods of control of microbial growth using moist heat, dry heat, cold, filtration, osmotic pressure and radiation? Give an application for each method.
5. What are chemical methods of control of microbial growth? For each classification give at least one application. Can you suggest a means of determining the relative effectiveness of a new "bactericidal" agent?
6. What are autotrophs and heterotrophs? Describe the four main categories of microorganisms on the basis of nutritional type.
7. What are three basic ways to isolate pure cultures? What are the advantages and disadvantages of each technique?
8. What are the major differences between defined, complex, selective and differential media?
9. Identify the different categories of microbes on the basis of environmental factors such as temperature, oxygen, PH, etc. How might cultivation of each kind of microbe be different?
10. What special properties of agar make it so important for cultivation of microbes on solid media?
11. What chemical elements are important for the growth of microbes? How is each used in the cell? Give a source of each chemical in the environment.
12. How are bacteria classified?
13. How are fungi classified?

14. What is the difference between a bacterial endospore and a fungal spore?
15. How are protozoans classified? Be able to recognize and give examples of each group.
16. Define metabolism. What are the major differences between catabolism and anabolism?
17. Briefly discuss the role of enzymes in the metabolic process. What factors can influence the activity of enzymes?
18. Briefly discuss the three phases of aerobic respiration. Include where each phase is occurring in the cell. Which phase produces the most energy? Are each of these phases identical in prokaryotic and eukaryotic cells?
19. What is the pentose phosphate pathway? What is its role in microorganisms? What is the Entner-Doudoroff pathway? In what types of organisms is it found?
20. What is the most common form of chemical energy in the cell? How do cells generate this form of energy? Discuss the chemiosmotic theory of ATP formation.
21. What are the relative differences in energy generated by aerobic respiration, fermentation, and anaerobic respiration?
22. What are the major differences between prokaryotic and eukaryotic photosynthesis?

