Chapter 6

1. Explain the difference between “essential nutrients” and “growth factors”.

2. List the chemical contents of the cell (hint: two compounds, six elements).

3. List the sources and roles of each of the following elements:

    a. Nitrogen

    b. Oxygen

    c. Hydrogen

    d. Phosphorus

    e. Sulfur

4. What are the main purposes of the following nutrients?

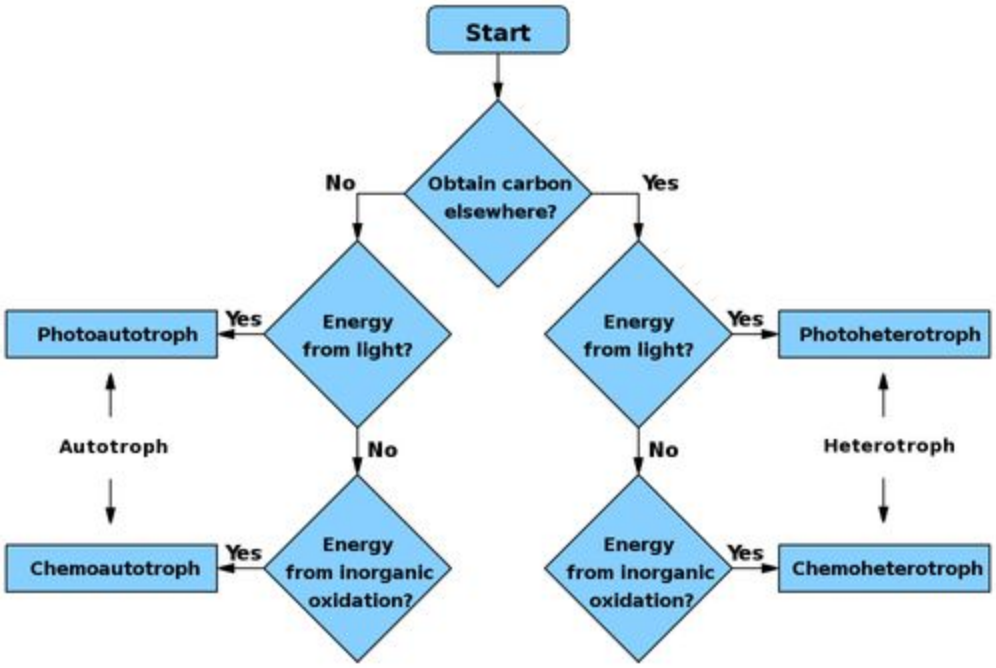
    a. Potassium

    b. Sodium

c. Calcium

d. Magnesium

e. Iron



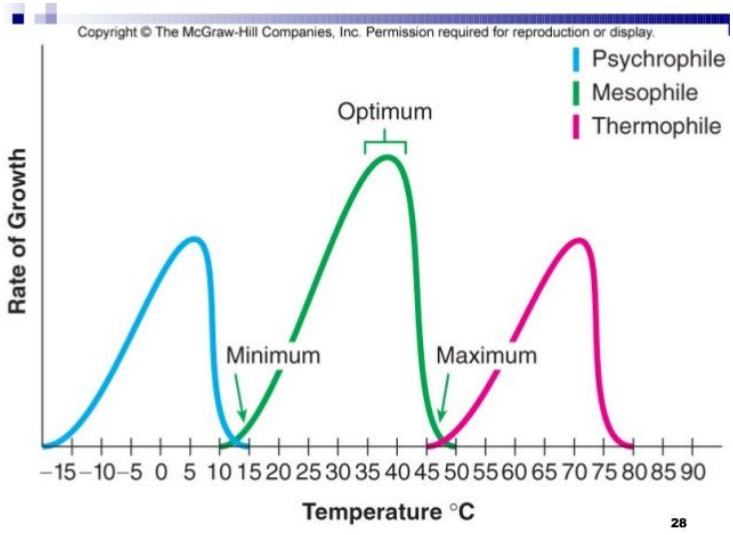
5. Define and list the types of saprobes.

6. What are parasites?

7. Explain extracellular digestion (as seen in a saprobe).

8. _____ is the totality of adaptations organisms make to their habitat (how they deal with environmental conditions).

9. What are some examples of toxic forms of oxygen?



10. Give an example of enzymes used to neutralize toxic oxygen molecules.

Microbe	Uses Oxygen	Doesn't use oxygen	Trait
Aerobe			
Obligate aerobe			
Facultative anaerobe			
Microaerophilic			
anaerobe			
Obligate anaerobe			
Aerotolerant anaerobe			

11. _____ require a high concentration of salt.

12. What is the main process of bacterial cell division?

13. Write out the rate of population growth equation.

14. A scientist starts with 5 bacterial cells (generation 1) and promotes 6 more generations of growth. How many bacterial cells does he finish with?

15. Draw and explain the population growth curve.

16. What are the 5 I's of culturing microbes?

17. _____ microbes require growth factors and complex nutrients

18. A mound of cells is called a _____.

19. What technique uses an inoculating loop to spread a sample onto an agar plate?

20. _____ technique uses diluted samples in a series of liquid medium tubes

Chapter 8

1. What are the three basic categories of genes?

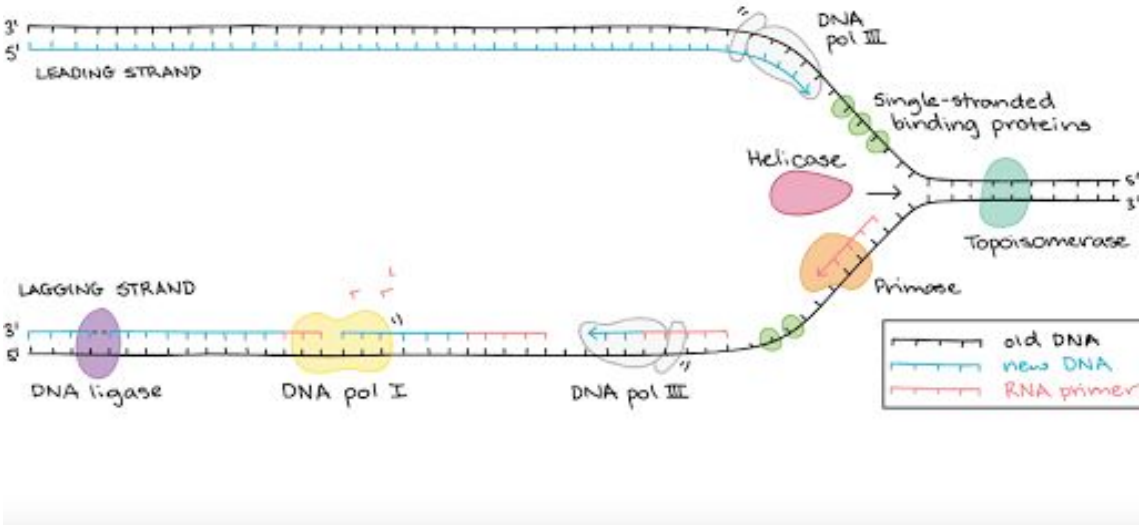
2. What is a phenotype?

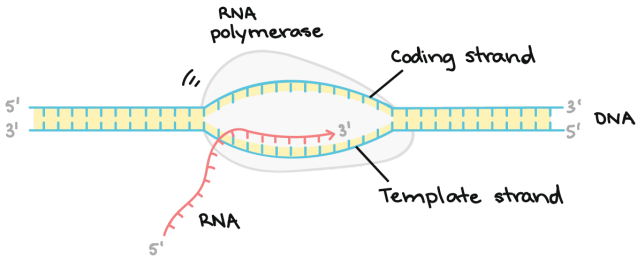
3. Explain the structure of DNA

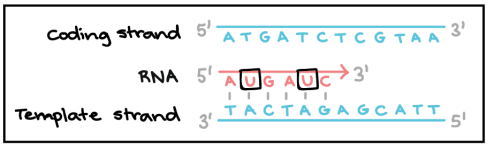
4. How is RNA different from DNA?

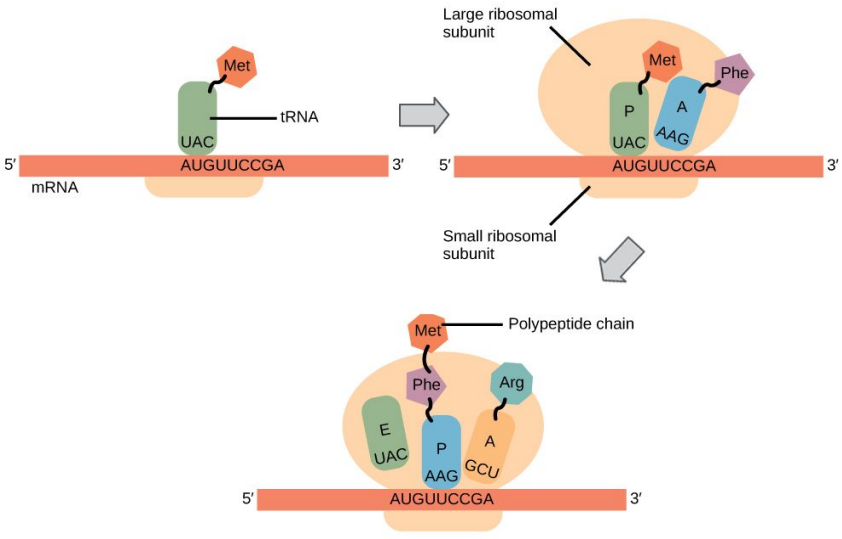
5. What is the purpose of DNA replication?

6. What is a codon?









7. How does transcription & translation differ between prokaryotes and eukaryotes?

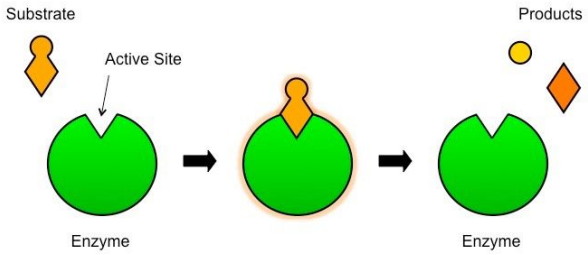
8. Describe the viral genome.

9. What is an operon?

10. An inducible operon is normally (on / off), and is turned (on / off) by the presence of a substrate.

11. A repressible operon is normally (on / off), and is turned (on / off) by the presence of the product synthesized.

12. What is a substrate?



13. What are the two types of repressors?

14. Define the following terms:

    a. Wildtype

    b. Mutant strain

    c. Spontaneous mutation

    d. Induced mutation

e. Genetic recombination

15. What are the three means of genetic recombination?

Chapter 13

1. What are the components of a virus?

2. Define the following terms:

    a. Virulent

    b. Virion

    c. Nucleocapsid

    d. Capsomers

3. What are spikes?

4. What are the purposes of a capsid / envelope?

5. What are the functions of the following enzymes?

    a. Polymerases

    b. Replicase

    c. Reverse transcriptase

1. _____ Adsorption 2. _____ Penetration 3. _____ Uncoating 4. _____ Synthesis 5. _____ Assembly 6. _____ Release	A. Viral components are produced B. Assembled viruses are released by building (exocytosis) or host cell lysis C. The new viral particles are put together D. Binding of virus to specific molecule on host cell E. Genome enters host cell by endocytosis or fusion F. The viral nucleic acid is released from the capsid/envelope

6. _____ is when the entire virus is engulfed and enclosed in a vacuole or vesicle.

7. _____ is when the envelope merges directly with the host cell membrane resulting in nucleocapsid's entry into the cytoplasm.

8. Define oncogenic.

9. What are persistent infections?

10. What are temperate phages?

11. _____ is the potential ability of bacteria to produce phage (allows spread of the virus without killing the host initially)

Chapter 9

1. Define the following terms:

    a. Microbial genetics

    b. Molecular biology

    c. Genomics

    d. Biotechnology

    e. Recombinant DNA

2. How is cDNA made?

3. _____ are self-replicating DNA used to carry the desired gene to a new cell.

4. How do biologists use mutations?

5. Explain blue-white screening.

6. What type of medium is used in blue-white screening?

7. What is PCR?

8. Explain gel electrophoresis.

9. What did Edward Jenner do?

10. What type of vaccine consists of only a portion of a pathogen's antigen?

11. What is gene therapy used for?

12. What happens in gene silencing?

13. _____ is a way of determining the function of a gene by blocking the gene and correlating it to the characteristic that is lost.

Chapter 7

1. Define the following terms:

    a. Decontamination

    b. Prions

2. What are the primary targets capable of causing infection or spoilage?

3. Categorize microbe targets according to resistance strength (highest, moderate, least).

4. _____ - physical or chemical agents used on inanimate objects to destroy vegetative pathogens.

5. _____ - chemical agents applied directly to exposed body surfaces to destroy/inhibit vegetative cells

6. What is “sanitization technique”?

7. What factors affect death rate?

8. List the factors that influence the rate at which microbes are killed.

9. What are cellular targets?

10. List the methods of physical control.

11. What are the levels of chemical decontaminants/germicides?

12. List the germicidal categories.