Bio 425	
Fall 2007	Name
1. Fill in the Blank (2 points each)	
	1. Bacteria that can only grow in reduced oxygen levels are called
	2. An average mesophile grows fastest at a temperature ofC.
	3. A(n) is a bacterium capable of growing in high salt concentrations.
	4. To counteract acid production, many bacteriological media contain
	5. A bacterium that respires in the presence of oxygen and ferments in its absence is called a(n) anaerobe.
	6 bacteria are able to grow at extremely low water availability.
	7. A(n) bacterium is able to grow on the top of jam that is left uncovered.
	8 culture refers to the process of growing bacteria by inoculating a sterile container of medium, growing the bacteria to a high concentration, and then harvesting the bacteria.
	9. A(n) agent is able to prevent the growth of bacteria which may or may not be lethal.
	10. A(n) is an antimicrobial agent designed for use on inanimate surfaces.
	11 is a gas commonly used to cold sterilize heat sensitive materials such as plastics.

 12. Millipore is the most common brand of filters.
 13. Flash pasteurization requiresC for seconds.
 14 are the most heat resistant life forms produced by bacteria.
 15. The most widely used member of the macrolide group is
 16. HIV is being effectively controlled by drugs which are inhibitors.
 17. Sulfamides work by blocking bacterial production.
 18 is the core molecule found in both penicillin and cephalosporin.
 19. Quinolones work by blocking bacterial
 20. Streptomycin was the first discovered and is one of the most widely used of the group of antibiotics.
21. Cells infected by a virus sometimes produce a chemical,,which protects other non-infected cells from viruses.
 22. The best antibiotics have the highest toxicity.
 23. An autoclave requires C for minutes to sterilize.
 28. A(n) is a region of DNA which controls the structural genes of an operon.
 25. The 70S ribosome is made up ofS and S subunits.
 26. The first amino acid in all newly formed bacterial proteins is

 27. Molecular are molecules that are critical in insuring the appropriate folding of newly formed protein molecules.
 28. The initial ribosome attachment site on bacterial mRNA is called the region.
 29. Self splicing introns are called
 30. Multiple ribosomes attached to a mRNA molecule are called a(n)
 31 are enzymes that allow DNA strand to be broken and then reformed so that the DNA can unwind.
 32. A(n) mutation corrects the damage caused by the first mutation.
 33. The genetic code is said to be because more than one codon can code for a single amino acid.
 34. Transcription in bacteria is terminated by either proteins or stem-loops.
 35 is a technique that detects mutants by reproducing colony patterns on multiple plates.
 36. Inverted repeats can lead to the formation of stem-loops or
 37. The test measures back mutation rates to determine if a chemical is a mutagen.
 38. Catabolite repression occurs when high concentrations of accumulate in the cell and interact with catabolite repressor protein.
 39. Sticky ends are formed when palindromes are cut by enzymes.

	40 is the process where the rate of translation can affect the transcription of a molecule.
II. Briefly Define (2 points each)	
41. MIC	
42. decimal reduction time	
43. transposons	
44.DNA melting	

45. Auxotrophs
46. Allosteric sites
III. List
47. List at least 4 differences between eukaryotic and prokaryotic chromosomes. (4 points)

IV Discussion

48. Describe in detail how bacteria replicate their DNA. (6 points) **TEST II**

Bio 425	
Spring 2007	Name
1. Fill in the Blank (2 points each)	
	1. The gas,, is a potential substrate for bacterial chemolithotrophy.
	2. Nitrate can act as the final electron acceptor during
	3. In the laboratory <i>E. coli</i> is able to replicate every (time).
	4. Secondary metabolite are produced during the phase of the bacterial growth curve.
	5. Some gram positive bacteria have a very short death phase because of the buildup of the enzyme,
	6 dilution counts bacteria by simply diluting them and then observing bacterial growth.
	7. A(n) is a mesophile that is able to grow at cold temperatures.
	8. A chemostat is a device used to maintain bacteria in culture.
	9 anaerobic bacteria can grow in the presence or absence of oxygen.
	10. The reduction time is the time need to reduce a bacterial population tenfold.
	11. Flash pasteurization requires C for (time).

 12. A(n) antiseptic blocks bacteria growth but does not immediately kill the bacteria.
13. Sulfa drugs work by blocking the synthesis of acid.
 14. The most widely used macrolide antibiotic is
15. A stem loop can form when a(n) repeat sequence occurs in the DNA.
 16. Microorganisms with high G + C content will melt at a temperature.
 17 are nonessential extrachromosomal genetic elements found in some bacteria.
 18 are also called movable genes.
19. The box is 1 of the 2 consensus sequences located upstream from the promoter.
 20. Rho proteins and are 2 processes often used by bacteria to terminate transcription.
 21. The 30 S portion of the bacterial ribosome contains RNA and proteins.
 22. The n-formyl group is needed to allow methionine to sit on the site on the ribosome to begin translation.
 23. Polysomes are created when multiple attach to RNA.
 24 enzymes are not regulated and are produced constantly.
 25. Enzyme repression occurs when the repressor protein binds with the co-

repressor and binds to the
 26. In attenuation, the rate of transcription determines whether continues.
27 sensing is used to detect proper population densities to turn so that bioluminescence bacteria can be turn on simultaneously.
 28. In two component regulation the kinase detects the environmental.
 29. Diauxic growth is also called
 30. During the end-product of the reaction blocks the activity of the first enzyme in the synthetic pathway
 31. Alternative factors can act as a global control turn on and off different sets of genes.
32. During selection the rapidly growing prototroph are killed and the auxotrophs remained dormant and can be resecued later.
33. The conversion of an auxotroph to a prototroph is an example of a mutation.
 34. The natural mutation rate for RNA is 1 per bases.
 35. A(n) is where the orientation of a piece of DNA is reversed in the genome.
36. A(n) lethal mutations allow scientists to turn off essential genes to study them while keeping the parent culture from being lost.
 37. A(n) agent is a mutagen that works by inserting itself between the base pairs of DNA.

	38. The test detects carcinogens by measuring the rate at which auxotroph mutate into prototrophs.
	39. Competent cells are used to increase the rate of bacterial
	40 requires bacteriophage to transfer DNA between 2 different bacteria.
	41. The lost of a plasmid from a host is called
II. Briefly Define (2 points each)	
42. Cold sterilization	
43. selective toxicity	

44. polyproteins

45. allosteric sites
III Draw (6 points)
46. Draw a bacterial chromosome undergoing replication. Be sure to include a replication fork and label the parts
IV Discussion (4 points)
46. Which are 2 of the most common ways to count bacteria and what are the advantages and disadvantage of each technique?



Bio 425 Fall 2006	Name
1. Fill in the Blank (2 points each)	Tunic
	1 bacteria require oxygen to grow but grow best at reduced oxygen levels.
	2 bacteria require high levels of salts to grow.
	3. The technique uses extinction dilution and statistic to estimate bacteria numbers.
	4. Most psychrophilic bacteria grow fastest at C.
	5 is an instrument which measures turbidity to estimate bacterial concentrations.
	6. In the laboratory, <i>E. coli</i> cultures can double every minutes.
	7 counting chambers are used to perform direct microscopic counts of bacteria.
	8. A(n) anaerobe can grow in the presence or absence of oxygen.
	9. Many bacteriological media contain to counter the production of acid which occurs with bacterial growth.
	10 culture refers to the process of growing bacteria by inoculating a sterile container of medium, growing the bacteria to a high concentration, and then harvesting the bacteria.
	11. An autoclave requires C for minutes to sterilize.

12. An antimicrobial agent is said to be

a(n) if it functions by blocking bacterial growth rather than killing the bacteria directly.
13 is a gas commonly used to cold sterilize heat sensitive materials such as plastics.
 14. Quinolones work by blocking the enzyme
 15 are growth factor analogs which block folic acid synthesis.
 16. Cephalosporin all share a common functional structure called
 17. A(n) is an antimicrobial agent designed for use on inanimate objects.
 18 is a nonspecific antiviral agent produced by infected cells that protects uninfected cells.
 19. Viruses and have monocistronic messages which produce polyproteins.
20 are extrachromosomal genetic elements which are nonessential to the host cell.
 21. Because the backbones of the DNA molecules run in different directions, they are said to be
 22. Inverted repeats can lead to the formation of hairpins or
 23 are enzymes which break and then seal strands of DNA to permit unwinding.
 24. The largest transposable elements are a
 25. The strand is produced continually during bacteria DNA replication and is

limited only by the availability of template.
 26 polymerase is also called transcriptase.
 27. Transcription begins when the sigma factor attaches to the region and the core enzyme comes together.
 28 are proteins involved in the removal of exons and the splicing together of introns.
29. The area between the first start codon after a Shine-Dalgrano region and the stop codon on a DNA molecule is called a(n)
 30. The 50S subunit of the bacterial ribosome is made up ofS and S RNA molecules and 34 proteins.
 31. The side group of the amino acid,, allows it to sit at the P site of the ribosome to begin translation.
 32. Molecular are molecules that are critical in insuring the appropriate folding of newly formed protein molecules.
33 inhibition is where the product of the metabolic pathways builds up in the cytoplasm and then inhibits the initial enzyme in the pathway.
 34. In 2 component regulation, the senses a signal on the exterior of the cell and then phosphorylates a molecule on the inside of a cell.
35. During enzyme repression, the repressor molecule binds to the operator when is present.
 36. A nutritional wild type bacterium is called a(n)

	37. The test measures back mutation rates to determine if a chemical is a mutagen.
	38. RNA generally has a mutation rate of 1 per
	39 is the process in bacteria where a piece of DNA can reverse it's orientation in the genome and change the phenotype of the bacterium.
	40. During transduction, only genes near the insertion site of the virus can be transferred.
	41. Cells that are have a much higher success rate to be transformed
	42. Plasmids that exist in high numbers in their host cells are said to have high numbers.
II. Briefly Define (2 points each)	
43. selective toxicity	
44. operon	

46.pencilin selection method
HI Duovy (4 moints)
III Draw (4 points) 47. Draw and label the part of a bacterial growth curve.
17. Draw and labor the part of a bacterial growth curve.
IV Discuss (4 points)

48. Describe catabolite repression and exTEST 2 Bio 425	xplain how it works.
Fall 2006	Name
1. Fill in the Blank (2 points each)	
	1 bacteria require oxygen to grow but grow best at reduced oxygen levels.
	2 bacteria require high levels of salts to grow.
	3. The technique uses extinction dilution and statistic to estimate bacteria numbers.
	4. Most psychrophilic bacteria grow fastest at C.
	5 is an instrument which measures turbidity to estimate bacterial concentrations.
	6. In the laboratory, <i>E. coli</i> cultures can double every minutes.
	7 counting chambers are used to perform direct microscopic counts of bacteria.
	8. A(n) anaerobe can grow in the presence or absence of oxygen.
	9. Many bacteriological media contain to counter the production of acid which occurs with bacterial growth.
	10 culture refers to the process of growing bacteria by inoculating a sterile container of medium, growing the bacteria to a high concentration, and then harvesting the bacteria.
	11. An autoclave requires C for minutes to sterilize.

12. An antimicrobial agent is said to be a(n) if it functions by blocking bacterial growth rather than killing the bacteria directly.
13 is a gas commonly used to cold sterilize heat sensitive materials such as plastics.
 14. Quinolones work by blocking the enzyme
 15 are growth factor analogs which block folic acid synthesis.
 16. Cephalosporin all share a common functional structure called
 17. A(n) is an antimicrobial agent designed for use on inanimate objects.
18 is a nonspecific antiviral agent produced by infected cells that protects uninfected cells.
 19. Viruses and have monocistronic messages which produce polyproteins.
20 are extrachromosomal genetic elements which are nonessential to the host cell.
 21. Because the backbones of the DNA molecules run in different directions, they are said to be
 22. Inverted repeats can lead to the formation of hairpins or
 23 are enzymes which break and then seal strands of DNA to permit unwinding.
 24. The largest transposable elements are a

 25. The strand is produced continually during bacteria DNA replication and is limited only by the availability of template.
 26 polymerase is also called transcriptase.
27. Transcription begins when the sigma factor attaches to the region and the core enzyme comes together.
 28 are proteins involved in the removal of exons and the splicing together of introns.
29. The area between the first start codon after a Shine-Dalgrano region and the stop codon on a DNA molecule is called a(n)
30. The 50S subunit of the bacterial ribosome is made up ofS and S RNA molecules and 34 proteins.
 31. The side group of the amino acid,, allows it to sit at the P site of the ribosome to begin translation.
 32. Molecular are molecules that are critical in insuring the appropriate folding of newly formed protein molecules.
33 inhibition is where the product of the metabolic pathways builds up in the cytoplasm and then inhibits the initial enzyme in the pathway.
 34. In 2 component regulation, the senses a signal on the exterior of the cell and then phosphorylates a molecule on the inside of a cell.
35. During enzyme repression, the repressor molecule binds to the operator when is present.

36. A nutritional wild type bacterium is called a(n)
37. The test measures back mutation rates to determine if a chemical is a mutagen.
38. RNA generally has a mutation rate of 1 per
39 is the process in bacteria where a piece of DNA can reverse it's orientation in the genome and change the phenotype of the bacterium.
40. During transduction, only genes near the insertion site of the virus can be transferred.
41. Cells that are have a much higher success rate to be transformed
42. Plasmids that exist in high numbers in their host cells are said to have high numbers.

44. operon

45. allosteric sites	
46.pencilin selection method	
III Draw (4 points) 47. Draw and label the part of a bacterial growth curve.	

48. Describe catabolite repression and explain how it works.					