**Mock Exam for CH 107 Exam 4 (Chapters 17 and 21). This is a similar format to the exam. Remember to pace yourself with the questions; you do not want to run out of time.**

1. Linoleic acid has 18 carbons with 2 double bonds that are between carbons 9 &10 and \_\_\_\_\_

12&13. Linoleic acid is an example of:

* 1. A monounsaturated fatty acid
  2. An omega 3 fatty acid
  3. A polyunsaturated fatty acid
  4. A soap

1. Compared to unsaturated fatty acids, saturated fatty acids have: \_\_\_\_\_
   1. Higher melting points
   2. Lower melting points
   3. Shorter carbon chains
   4. Longer carbon chains
2. Esters of three fatty acids and glycerol are known as: \_\_\_\_\_
   1. Triacylglycerides
   2. Waxes
   3. Triglycerides
   4. Glycerophospholipids
   5. A and C
3. Fats and oils are base hydrolyzed by NaOH or KOH to form \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Fatty acids glycerol
   2. Glycerol fatty acid salts
   3. Water fatty acid salts
   4. Glycerol water
4. Soap is simply a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Fatty acid salt
   2. Triacylglyceride
   3. Rancid fat
   4. Unsaturated fatty acid
5. Which of the following statements about soaps is **true**? \_\_\_\_\_
   1. They are solids at room temperature
   2. The non-polar portion is responsible for the water solubility of the soap
   3. They are formed from the acid hydrolysis of triglycerides
   4. The polar portion is responsible for the water solubility of the soap
6. A solid triglyceride at room temperature is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Oil
   2. Fat
   3. Wax
   4. Fatty acid
7. Which of the following accurately describes the components of a glycerophospholipid: \_\_\_\_\_
   1. Glycerol, phosphate, fatty acids
   2. Fatty acids salts, amino alcohol, phosphate
   3. Glycerol, phosphate, amino alcohol
   4. Fatty acids, glycerol, amino alcohol, phosphate
8. Fats and oils are acid hydrolyzed to form: \_\_\_\_\_
   1. Fatty acids and glycerol
   2. Glycerol and fatty acid salts
   3. Fatty acids and water
   4. Glycerol and water
9. Which of the following statements about cell membranes is **false**? \_\_\_\_\_
   1. It is a lipid bilayer made of two rows of phospholipids.
   2. The inside is hydrophilic while the outside is hydrophobic.
   3. They are comprised of both saturated and unsaturated fatty acids.
   4. Other molecules may be present in the membrane because the fatty acids are packed in a manner that is not rigid
10. A glycerophospholipid is an example of a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
    1. Amino alcohol
    2. Biodiesel
    3. Triacylglyceride
    4. Zwitterion
11. A triglyceride that is solid at room temperature is called a \_\_\_\_\_\_\_\_\_ while a triglyceride \_\_\_\_\_

that is a liquid at room temperate is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* 1. Wax Oil
  2. Fat Wax
  3. Fat Oil
  4. Fatty acid Oil

1. Lipids are soluble in \_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Chloroform
   2. Water
   3. Distilled water
   4. Alcohol
2. This is composed of a base, sugar, and phosphate group. \_\_\_\_\_
   1. Nucleotide
   2. Nucleoside
   3. Ribose
   4. Purine
3. What type of bonds hold the nucleotides in the backbone of DNA together? \_\_\_\_\_
   1. Hydrogen
   2. Glycosidic
   3. Peptide
   4. Phosphodiester
4. What are the two types of nucleic acids? \_\_\_\_\_
   1. mRNA and tRNA
   2. DNA and mRNA
   3. DNA and RNA
   4. rRNA and mRNA
5. When DNA replicates, adenine forms a base pair with \_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Guanine
   2. Cytosine
   3. Uracil
   4. Thymine
6. Which of the following is the base sequence of the strand of DNA complementary to \_\_\_\_\_

5’-A-T-T-G-C-T-A-G-3’

* 1. 3’- A-T-T-G-C-T-A-G-5’
  2. 3’-T-A-A-C-G-A-T-C-5’
  3. 3’-U-A-A-C-G-A-U-C-5’
  4. 5’-T-A-A-C-G-A-T-C-3’

1. Which of the following is the base sequence for the strand of mRNA that is produced from \_\_\_\_\_

a DNA template having a base sequence of 5’-A-T-G-T-C-A-G-C-3’

* 1. 5’-U-A-C-A-G-U-C-G-3’
  2. 3’-U-A-C-A-G-U-C-G-5’
  3. 5’-U-A-C-A-G-T-C-G-3’
  4. 5’-T-A-C-A-G-T-C-G-5’

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is made by adding a phosphate to the nucleoside diphosphate. \_\_\_\_\_

It is the energy source for DNA replication.

* 1. Triphosphates
  2. Glucose
  3. Diphosphates
  4. Phosphodiester

1. The bonds between bases and sugars in a nucleotide are: \_\_\_\_\_
   1. Hydrogen
   2. Glycosidic
   3. Phosphodiester
   4. Peptide
2. The bonds that link base pairs in the DNA double helix are: \_\_\_\_\_
   1. Hydrogen
   2. Glycosidic
   3. Phosphodiester
   4. Peptide
3. Which of the following is an accurate description of semi-conservative replication? \_\_\_\_\_
   1. The parent strands form a duplicate new daughter double strand.
   2. The parents strand each form one strand of two new daughters.
   3. The mRNA code is translated into a protein.
   4. The initial amino acid sequence is synthesized.
4. The process by which mRNA is synthesized from DNA is known as\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Transcription
   2. Translation
   3. Semi-conservative replication
   4. Conservative replication
5. This is a sequence of three nucleotides on the mRNA that codes for amino acids: \_\_\_\_\_
   1. Anticodon
   2. Peptide
   3. Codon
   4. Intron
6. The conversion of the mRNA code into a peptide chain is a process known as: \_\_\_\_\_
   1. Transcription
   2. Translation
   3. Semi-conservative replication
   4. Conservative replication
7. This is a change in the primary DNA sequence: \_\_\_\_\_
   1. Recombinant DNA
   2. HIV
   3. Tumor
   4. Genetic mutation
8. This type of mutation occurs when one of the DNA bases is substituted for another, \_\_\_\_\_

which leads to a codon change on the mRNA:

* 1. Point mutation
  2. Insertion/deletion mutation
  3. Frame-shift mutation
  4. Substitution mutation

1. In this common genetic disease, there is a mutation in the CF transmembrane \_\_\_\_\_

Conductance regulator, which results in the deletion of the amino acid F508.

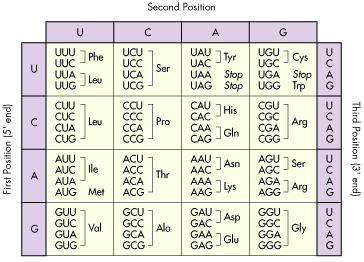
* 1. Sickle-cell anemia
  2. Huntington’s Disease
  3. Cystic Fibrosis
  4. Down syndrome

1. What is the name for the following mutation? \_\_\_\_\_

AUG-AUC-GUU-GGG-UGA

🡪AUG-AUC-GUU-GGA-UGA

1. Substitution mutation
2. Silent mutation
3. Frame-shift mutation
4. Insertion/deletion mutation



**Short Answer: Complete any 4 from the following 6 questions.**

1. Discuss soaps: what they are, how they are made, and how they clean.
2. Draw (all atoms) the triglyceride made from stearic acid (18 carbon fatty acid).
3. Draw cartoons of 1) a wax, 2) a triglyceride, and 3) a glycerophospholipid. Label the components and the linkages.
4. Discuss point mutations. Include the effects that point mutations have.
5. Describe Cystic Fibrosis. What is the mutation, what effects does it have on a person, and what is a possible cure for it?
6. Discuss Huntington’s Disease. What is the mutation and what does it affect?