**Mock Exam for CH 107 Exam 3** (**Chapters 18, 19.** **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. Which of the following is a secondary amine? \_\_\_\_\_
   1. CH3NCH3
   2. CH3CH2(CO)NHCH3
   3. CH3NHCH2CH3
   4. CH3(CO)N(CH3)2
2. The reaction between an amine and \_\_\_\_\_\_\_\_\_\_\_\_ forms an amide. \_\_\_\_\_
   1. ketone
   2. Alcohol
   3. Carboxylic acid
   4. Aldehyde
3. Name the following compound: CH3CH2CH2CH2(CO)N(CH3)2  \_\_\_\_\_
   1. Dimethyl pentyl amide
   2. N,N-dimethyl pentanamide
   3. N,N-dimethyl pentyl amide
   4. Dimethyl pentyl amine
4. The amine ethyl pronanamine is a \_\_\_\_\_\_\_\_\_\_\_\_\_ amine and will react with \_\_\_\_\_

propanoic acid to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* 1. Secondary N-ethyl-N-propyl propanamide
  2. Secondary N,N-dipropyl ethanamide
  3. Tertiary Ethyl propyl propanamide
  4. Tertiary N-ethyl-N-propyl propanamide

1. \_\_\_\_\_\_\_\_\_\_\_\_\_ is an alkaloid that was the first antimalarial drug. \_\_\_\_\_
   1. Pumiliotoxin
   2. Theobromine
   3. Acetaminophen
   4. Quinine
2. A quaternary ammonium compound has a nitrogen bonded to \_\_\_\_\_\_\_\_ carbons and \_\_\_\_\_

has a \_\_\_\_\_\_\_\_\_ charge.

* 1. Four positive
  2. Four negative
  3. Five positive
  4. Three negative

1. A polyamide is made from a \_\_\_\_\_\_\_\_\_\_ and a \_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Diacid diacid
   2. Diamine dialcohol
   3. Diacid diamine
   4. Diamine diamide
2. \_\_\_\_\_\_\_\_\_\_\_ will react with an amine to form an amine salt. \_\_\_\_\_
   1. HCl
   2. H2O
   3. NH4+
   4. Ammonia
3. The reaction of hexanoic acid and dimethylamine will form \_\_\_\_\_
   1. 2,2-dimethylhexanamide
   2. N,N-dimethylhexanamine
   3. N-ethylhexanamide
   4. N,N-dimethylhexanamide
4. A \_\_\_\_\_\_\_\_\_\_\_\_ is a molecule with both positive and negative charges. \_\_\_\_\_
   1. Heterocyclic amine
   2. Zwitterion
   3. Free base
   4. Polyamide
5. Which of the following is NOT a nonpolar amino acid? \_\_\_\_\_
   1. Methionine
   2. Leucine
   3. Cysteine
   4. Phenylalanine
6. Amino acids link together to form peptides and proteins. A \_\_\_\_\_\_\_\_\_\_\_ has \_\_\_\_\_

thousands of residues while a \_\_\_\_\_\_\_\_\_\_\_\_ has less than 50 residues.

* 1. Protein peptide
  2. Protein protein
  3. Peptide protein
  4. Peptide peptide

1. The name of the bond that combines amino acids is \_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Amide bond
   2. Protein bond
   3. Peptide bond
   4. Hydrophobic bond
2. Amino acids that are not synthesized in the body and must be obtained from the \_\_\_\_\_

diet are called

* 1. Incomplete
  2. Essential
  3. basic
  4. polar

1. Which of the following amino acid sidechains has a positive one charge? \_\_\_\_\_
   1. F
   2. D
   3. K
   4. W
2. Gly-Met-Asn-Arg-Lys-Trp is a \_\_\_\_\_\_\_\_\_\_\_\_\_ that has \_\_\_\_\_\_\_\_\_ peptide bonds.. \_\_\_\_\_
   1. Hexapeptide six
   2. Hexapeptide five
   3. Pentapeptide six
   4. Pentapeptide five
3. The bond between two cysteine molecules are called \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_
   1. Disulfide bonds
   2. Peptide bonds
   3. Hydrogen bonds
   4. Nonpolar interactions
4. Hydrogen bonds are important in the \_\_\_\_\_\_\_\_\_\_\_\_\_ structure of proteins. \_\_\_\_\_
   1. Primary
   2. Secondary
   3. Tertiary
   4. Quaternary
5. Which of the following is NOT part of the tertiary structure of proteins? \_\_\_\_\_
   1. Peptide bonds
   2. Hydrophobic interactions
   3. Hydrogen bonds
   4. Hydrophilic interactions
6. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the overall protein structure while the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the \_\_\_\_\_

spatial arrangement of neighboring residues.

* 1. Tertiary Secondary
  2. Tertiary Primary
  3. Quaternary primary
  4. Quaternary secondary

1. Globular proteins are \_\_\_\_\_\_\_\_\_\_\_\_ while fibrous proteins are \_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Structural functional
   2. Functional structural
   3. Not water soluble water soluble
   4. Disulfide bonds hydrogen bonds
2. In the peptide Glu-Ala-Gln-Gly, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the C terminal residue and \_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_ is the N terminal residue.

* 1. Glycine Glycine
  2. Glutamic acid Glycine
  3. Glycine Glutamic acid
  4. Glutamine Glycine

1. What functional group is in the amino acid sidechain of asparagine? \_\_\_\_\_
   1. Amine
   2. Amide
   3. Thiol
   4. Carboxylic acid
   5. Alcohol
2. The type of interaction between the sidechains of valine and leucine is expected to be: \_\_\_\_\_
   1. Disulfide bond
   2. Hydrophobic interaction
   3. Peptide bond
   4. Hydrogen bond
3. The two peptide chains in insulin have what type of bond? \_\_\_\_\_
   1. Disulfide bond
   2. Hydrophobic interaction
   3. Peptide bond
   4. Hydrogen bond
4. Amines are considered to be \_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_
   1. Acidic
   2. Basic
   3. Neither acidic or basic
   4. Both acidic and basic
5. Which of the following is not true about free bases? \_\_\_\_\_
   1. They are very volatile
   2. They are soluble in hydrophobic solutions
   3. They are uncharged amines
   4. They are soluble in hydrophilic solutions
6. The bonds between strands in a β sheet are: \_\_\_\_\_
   1. Hydrogen bonds
   2. Disulfide bonds
   3. Peptide bonds
   4. None of the above
7. In what form are amine-containing drugs administered? \_\_\_\_\_
   1. Amine salt
   2. Free base
   3. Pumiliotoxin
   4. Polyamides
8. \_\_\_\_\_\_\_\_\_\_\_\_ are amines derived from plants, animals, and fungi. \_\_\_\_\_
   1. Alkaloids
   2. Pain relievers
   3. Free bases
   4. Acetaminophen
9. Amides are considered to be: \_\_\_\_\_
   1. Basic
   2. Acidic
   3. Neither acidic nor basic
   4. Both acidic and basic
10. Opioid peptides that are similar to opiate alkaloids in that they produce pain relief \_\_\_\_\_

and feelings of euphoria are \_\_\_\_\_\_\_\_\_\_\_\_.

* 1. Endorphins
  2. Sweeteners
  3. Kevlars
  4. Acetaminophens

1. In the reaction called amidation, a secondary amine will yield: \_\_\_\_\_
   1. A primary amide
   2. a secondary amide
   3. a tertiary amide
   4. no reaction

**Short Answer: Answer any 4 of the following 6 questions. If you do all 6, he will only grade the first 4 (even if you got number 5 right and number 3 wrong, you will get ¾ correct…so be careful!)**

1. Draw a tetrapeptide with all nonpolar residues. Number the residues; give the three letter code, and indicate the peptide bonds, the amino terminus, and carboxyl terminus.
2. Write the complete reaction for the formation of a tertiary amide containing 7 carbons. Name all reactants and products.
3. Compare and contrast globular and fibrous proteins (at least three items), and give an example of each type.
4. List three protein tertiary structure interactions. For one of these, name possible amino acids that can be involved.
5. Draw and name two primary, two secondary, and two tertiary amines for C6H15N
6. Describe the toxication of acetaminophen.