

### CHEM 108- Term Project (TP) Part 3

This is Part 3 of your TP. Please follow these rules:

1. This is to be done *on your own, aka individually*. Any suspicion of collaboration with another student will result in an automatic zero. Submitting your assignment to the dropbox on eClass verifies that you agree that the work turned in is yours and yours alone.
2. All answers must be what we learned in class! If you have an answer that is not based on what we learned in class, you will be marked wrong.
3. You must fill out your answers and work on the report sheet. I will not accept any answers/work that are not on the report sheet.
4. This TP is due May 6<sup>th</sup> by **noon** pm to be turned in to the dropbox on eClass.

For this part you must answer each of the following:

1. <sup>8</sup>Clearly identify the presence of an alpha carbons in your structure by putting a star/highlighting at the appropriate carbon(s). If you have none explain why?
2. <sup>8</sup>Clearly identify the presence of any chiral carbons in your structure by putting a star/highlighting at the appropriate carbon(s). If you have none explain why?
3. <sup>8</sup>Clearly identify the presence of an anomeric carbons in your structure by putting a star/highlighting at the appropriate carbon(s). If you have none explain why?
4. <sup>8</sup>Clearly identify the presence of a peptide bonds in your structure by putting a star/highlighting at the appropriate bond(s). If you have none explain why?
5. <sup>10</sup>Answer the first bullet- if you cannot then answer the second instead- if cant answer either then please explain why.
  - <sup>10</sup>Does your structure have the ability to form a hemiacetal or acetal if methanol is added in the presence of heat and acid? Draw the product.
  - <sup>10</sup>Does your structure have the ability to form a hemiacetal or acetal if acetone is added in the presence of heat and acid? Draw the product.
6. <sup>12</sup>Draw what your molecule would look like at a pH of 1 and clearly identify the overall charge.
7. <sup>12</sup>Draw what your molecule would look like at a pH of 13 and clearly identify the overall charge.
8. <sup>14</sup>If your molecule was the side chain of an amino acid, in a protein, what tertiary structure stabilizers could be present? Make a key and use color to highlight what part of you structure can be stabilized in each manner?
9. <sup>10</sup>What components of the plasma membrane might you drug interact with? Explain.
10. <sup>10</sup>Which tests that we did in lab this semester would possibly work on your molecule. List the test, why it tests positive, and what color the positive test result would be.

# TP Part 3 Report Sheet

You may mark all of the following directly on this one structure if you make a color coded key that is EASY for me to follow:

1.  $^8\alpha$  carbons color:
2.  $^8$ chiral carbons color:
3.  $^8$ anomeric carbons color:
4.  $^8$ peptide bonds:

Draw structure:

Explanations for why any of the above NOT present:

5.  $^{10}$ Does your structure have the ability to form a (circle): **hemiacetal or acetal or neither if methanol** is added in the presence of heat and acid?

Draw the product.

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If you answered **neither to above question you must answer this question instead.**  
Does your structure have the ability to form a (circle): **hemiacetal or acetal or neither** if **acetone** is added in the presence of heat and acid?

Draw the product.



If you answered **neither to both previous questions you must explain why neither reaction would work below.**

6. <sup>12</sup>Draw molecule at pH = 1 Overall charge: \_\_\_\_\_



7. <sup>12</sup>Draw molecule at pH = 12 Overall charge: \_\_\_\_\_



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8. <sup>14</sup>If your molecule was the side chain of an amino acid, in a protein, what tertiary structure stabilizers could be present? Make a key and use color to highlight what part of you structure can be stabilized in each manner?

Draw structure:

**KEY:**

- Hydrophobic interactions:
- Salt bridge:
- Covalent bonds:
- Hydrogen bonding:
- Metal ion coordination:

9. <sup>10</sup>What components of the plasma membrane might you drug interact with? Explain can use as many components as you need (may need more or less).

Component 1 and why:

Component 2 and why:

Component 3 and why:

10. <sup>10</sup>Which tests that we did in lab this semester would possibly work on your molecule. List the test, why it tests positive, and what color /appearance the positive test result would be. **If a test is not applicable then leave it blank**

Test	Why positive	Color
Solubility with water		
Chromate test		
Iodoform test		
Benedicts test		
Fermentation test		
Iodine test		
Seliwanoff's test		
Biuret's test		
Ninhydrin test		
Xanthoproteic test		



Sertraline

