Exam #2

This is a 35 question multiple-choice exam. You may use your book and notes during the exam. **You may not** work with another person on this exam. The exam will be a one-hour exam. Your answers will need to be emailed to me, <u>daniels@uidaho.edu</u>, no later than 11:30 AM on Wednesday, April 29^{sd}. There will be points taken off for late exams. Please email me the list of your answers. (See example)

For example:

- 1. D
- 2. A
- 3. C
- 4. Etc.

The exam begins on the next page.

- 1. What is a correct name for this organic molecule?
 - a. isopropoxy cyclohexane
 - b. cyclohexyl isopropyl ether
 - c. *sec*-butoxy cyclohexane
 - d. 2-methylpropoxy cyclohexane
- 2. What is the IUPAC name for this structure?
 - a. 3-mercapto-4-bromo cyclopentanol
 - b. 4-bromo-3-mercapto cyclopentanol
 - c. 5-bromo-3-hydroxy cyclopentanethiol
 - d. 2-bromo-4-hydroxy cyclopentanethiol



3. What are the final product(s) of the following reactions?



- a. only 3
- b. 1, 2 and 3
- c. only 4
- d. 4 and 5

- 4. How many carbon and hydrogen environments in the following molecule?
 - a. 4 carbon and 4 hydrogen
 - b. 2 carbon and 4 hydrogen
 - c. 4 carbon and 8 hydrogen
 - d. 4 carbon and 5 hydrogen



5. Identify the product(s) of the following reaction.



- a. 1 and 2
- b. 3 and 4
- c. only 3
- d. only 2

6. What reagent would perform the following transformation?



- a. ICH₂ZnI
- b. $CHBr_3$ with KOH in H_2O
- c. Swern's Reagent
- d. PCC
- 7. Which of the following is **not** an intermediate in the base catalyzed keto-enol tautomerism of 2-pentanone? *Lone pairs of electrons are not shown*.





8. What is the product of the following reaction?

9. How many hydrogen environments are in the following molecule?



10. Which of the following molecules would release the most heat in a hydrogenation reaction?



11. What would be the product(s) of the following reaction?



- b. Only 2
- c. Only 1
- d. Neither 1 or 2

12. What would be the integration and splitting for the hydrogens on the carbon atom labeled A in the following molecule? *Hydrogens are not shown*.



- a. Integration = 3 and splitting would be a singlet
- b. Integration = 3 and splitting would be a triplet
- c. Integration = 1 and splitting would be a singlet
- d. Integration = 1 and splitting would be a triplet
- 13. What is the major product for the following reaction?





14. What is major product of the following series of reactions?







- a. only 1 and 2
- b. 1, 2 and 3
- c. only 2
- d. only 2



16. What would be the major product of the following reaction?



17. What would be the major product of the following reaction?



18. What is the starting alkyne of the following series of reactions?

19. Which of the following bonds would vibrate at the lowest frequency?

- a. c _____ c b. c _____ c c. c _____ o
- d. c≡≡≡c



20. What is the major product of the following reaction?



21. What is the most correct answer regarding the products of following reaction?

- a. All of the products with 4 being the major product.
- b. Only 1, 2 and 5 with 5 being the major product.
- c. Only 1, 2 and 5 with 2 being the major product.
- d. Only 2.



22. Which is **not** an intermediate structure in the acid catalyzed addition of water in the following reaction?





24. What reaction or set of reactions could not produce cis-1,2-cyclohexanediol?





25. Identify the product(s) of the following reaction.

- a. Only 2 and 3
- b. Only 4
- c. Only 1 and 4
- d. Only 3

26. Which reagents would give the following as a major product?



27. Which of the following molecules would have an IR inactive carbon-carbon stretch?



28. What is the major product of the following reaction?





29. What is the major product for the following reaction?

30. What is the correct IUPAC name for the following molecule?



- a. 2-hydroxy-3-propyl-1-hexyne
- b. 4-hydroxy-3-propyl-1-pentyne
- c. 3-ethynyl-2-hexanol
- d. 3-propyl-4-pentyn-2-ol



31. Which of the following reagents would perform the following transformation?

32. Which of the following reagents would perform the following transformation?



- a. 1 and 3
- b. 1 and 4
- c. 2 and 4
- d. only 1



33. What is the product of the following reaction?

34. What is the major product of the following reaction?





35. What is the most appropriate representation of the product of the following reaction?