

Name _____

Please write your name on the back.

Physiological Chemistry II

Exam I

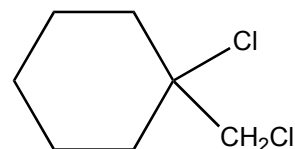
Dr. Melissa Kelley

February 11, 2009

Provide the one best answer for each question, following the instructions given in each section of the exam. You have 50 minutes to complete the exam.

In the following questions, provide the reactant or product of the reaction given. If there is no reaction, specify no reaction (NR) in the answer. Questions 1-10. Each question is worth 3 points.

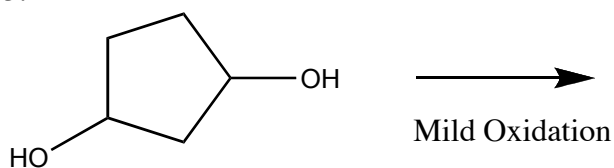
1.



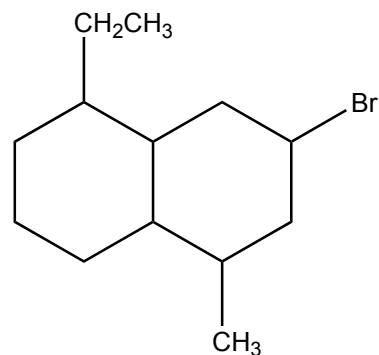
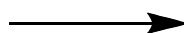
2.



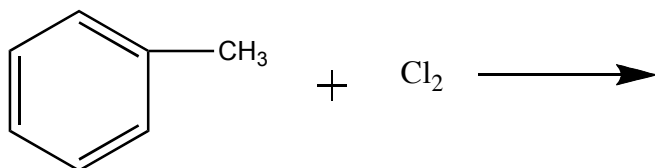
3.



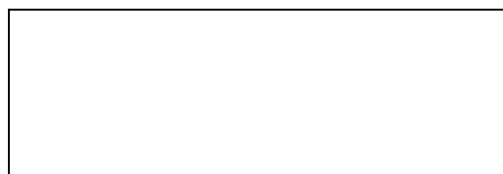
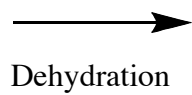
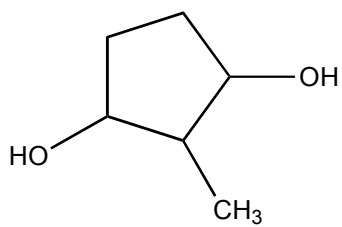
4.



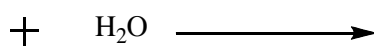
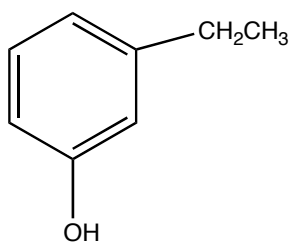
5.



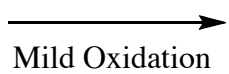
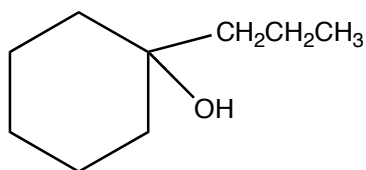
6.



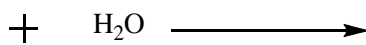
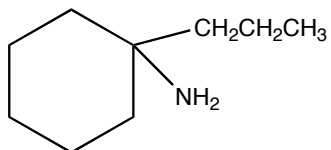
7.



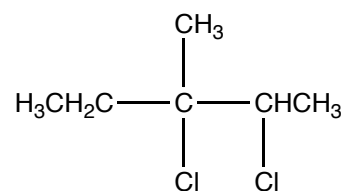
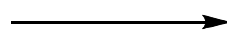
8.



9.

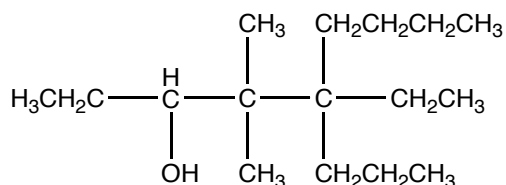


10.

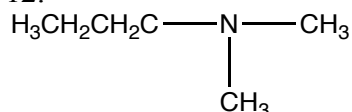


Name the following compounds. Questions 11-14. Each question is worth 3 points.

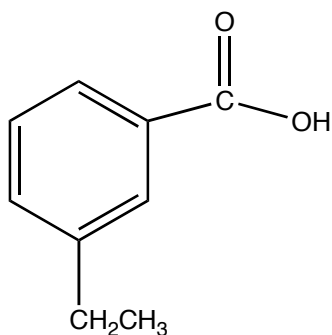
11.



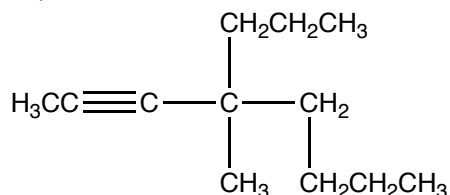
12.



13.



14.



Multiple Choice: Select the one best answer to each question. Questions 15-19. Each question is worth 4 points.

_____ 15. Which of the following compounds would be the highest boiling point?

- A. aniline B. N-ethylmethylamine C. benzaldehyde D. 3-methyl-1,2-butadiene

_____ 16. Mild oxidation of 4,4-dimethyl-1-hexanol will yield which of the following products?

- A. Alkene B. No Reaction C. Aldehyde D. Ketone

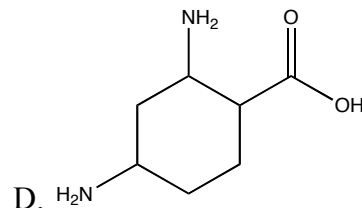
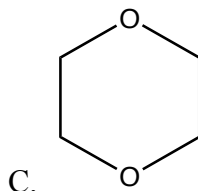
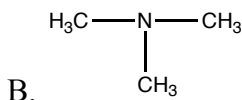
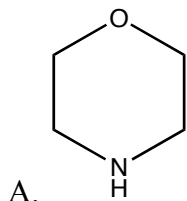
_____ 17. Which of the following statement is **not** correct?

- A. Aniline has a higher boiling point than benzoic acid.
B. Tertiary amines are less soluble in water than tertiary alcohols.
C. 3-methyl-2-propanol is more water-soluble than dipentane ether.
D. 3-ethyl-2-hexene has a lower boiling point than its hydrated product.

18. Which of the following statements is **not** correct?

- A. Hydration of 3-methyl-2-hexene followed by oxidation will yield a ketone.
- B. Hydration of 3-methyl-1-hexene followed by oxidation will yield an aldehyde.
- C. Hydrogenation of 3-methyl-hexene followed by halogenation will yield an alcohol.
- D. Hydrohalogenation of 3-ethylcyclohexene followed by halogenation will yield an alkyl halide.

19. Which of the following compounds would be the most soluble in water?



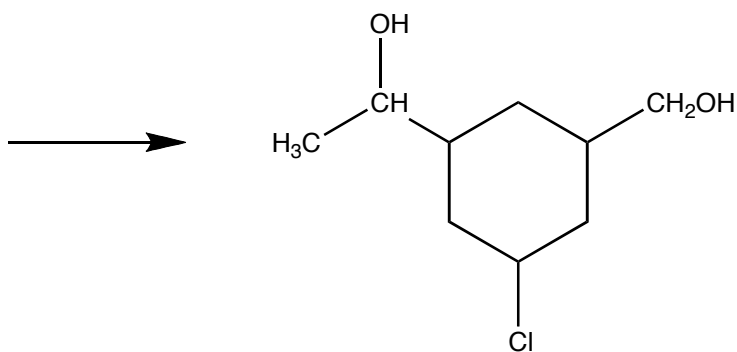
Draw the chemical structures for the following compounds. Questions 20-23. Each question is worth 3 points.

20. *o*-butylaniline

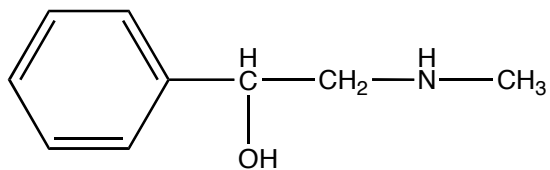
21. 1-butyl-2,3-dipropylcyclopentene

Short essay. Questions 22-26.

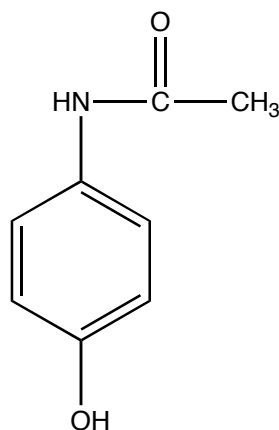
22. (6 points) A student working in Dr. Kelley's laboratory obtains the compound shown below. What did the student use as the initial **alkene** reactant to obtain this product? Draw the structure of the alkene reactant to the left of the product.



23. (6 points) A drug company has made the decongestant shown below. In the space below draw the structure of the structure of this drug when it is present in the blood stream.



24. (4 points) Shown below is the structure of Tylenol. Draw all missing lone pairs of electrons on atoms that contain them. Using your knowledge of hydrogen bonding, show how water would hydrogen bond to Tylenol (show two water molecules, one acting as an acceptor and the other acting as a donor).



25. (16 points) In the molecule shown below, circle all of the functional groups and next to your circle write the name of the function group.

