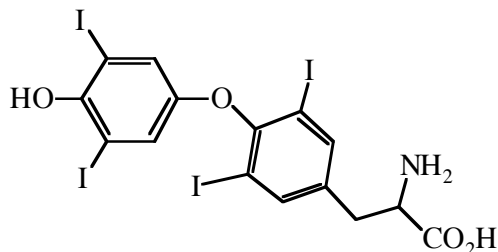


Name _____

Chem 152
Summer 2003
Exam #1

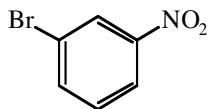
(10 pts) 1. Circle and identify five different functional groups in thyroxine. Remember that alkanes are not a functional group.



Thyroxine - a thyroid hormone that has been isolated from the thyroid glands of animals. It has not been found elsewhere in nature.

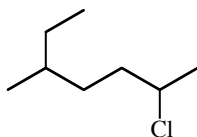
(25 pts) 2. Provide the IUPAC name of each compound shown.

a.



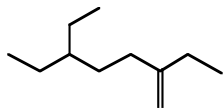
Name: _____

b.



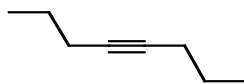
Name: _____

c.



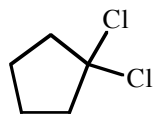
Name: _____

d.



Name: _____

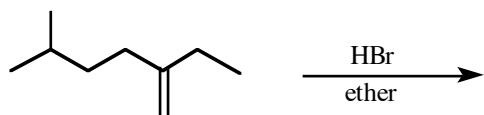
e.



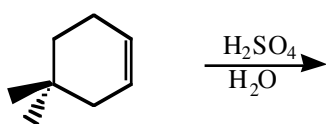
Name: _____

(15 pts) 3. Predict the major product(s) for each reaction.

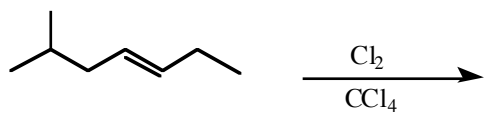
a.



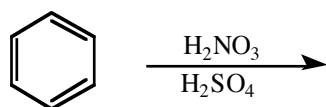
b.



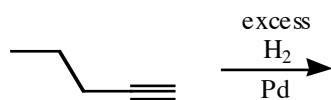
c.



d.

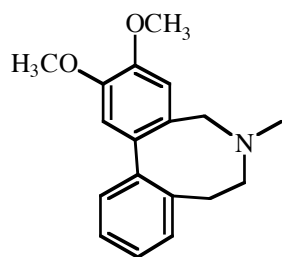


e.



(15 pts) 4. Draw 5-bromo-2,2,3-trimethylheptane and put a circle around the 1° carbons, a square around the 2° carbons, and a triangle around the 3° carbons.

(10 pts) 5. Buflavine (shown below) is a natural product from *Amaryllidaceae* plants (daffodils belong to this same family). Buflavine is isolated from the *Boophane flava* bulbs from Africa. Such compounds have been shown to exhibit anti-serotonin activity (see *Tetrahedron Lett.* **2003**, *44*, 5239). Draw buflavine out so that all of the carbons, hydrogens, oxygens, nitrogens, bonds, and lone pairs of electrons are shown.



buflavine

(10 pts) 6. Pretend that you are stranded on a desert island, but fortunately you have a cell phone to order any reagents that you might need (800-558-9160). You had the forethought to pack a bottle of toluene (I won't ask why). Aspirin can be synthesized from toluene and you have a splitting headache. Ortho-chlorotoluene is a precursor to aspirin. Draw toluene and o-chlorotoluene. Show the reagents that you would order to make o-chlorotoluene (assume you have all the glassware needed). Discuss any problems with your synthesis that you foresee.

(15 pts) 7. Indicate the structures of four possible monochloro isomers for the reaction indicated.

