Name _____

Please print your name & circle last name

Chemistry 331 A (Dr. Barton)

Exam I

Wednesday, September 17, 2008

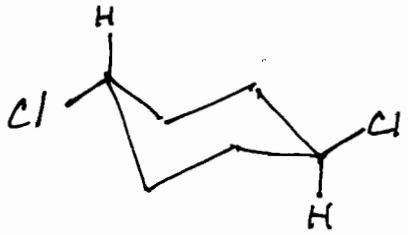
I. (9 pts)	_____
II. (12 pts	_____
III. (20 pts)	_____
IV. (9 pts)	_____
V. (9 pts)	_____
VI. (5 pts)	_____
VII. (5 pts)	_____
VIII. (20 pts)	_____
IX. (10 pts.)	_____
X. (1 pt)	_____

_____

TOTAL (100 pts) _____

Chem. 331 A Exam I Fall, 2008

I. (9 pts.) Provide a complete and proper name for each of the following structures.

A. 

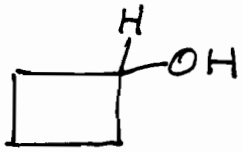
B. $CH_3CH(Br)CH_2CH(CH_2CH_3)CH_2CH_3$

C. 

II. (12 pts) Based on their functionalities, state the type of each compound listed here.

A. $CH_3C(=O)OCH_3$ _____

B. $CH_3NHCH_2CH_3$ _____

C. 

_____

D. $H_3CC{\equiv}CCH_2CH_3$ _____

III. (20 pts.) A covalent bond is formed through _____ of electrons. The carbons in an alkane are _____ hybridized, while the carbons in acetylene (ethyne) are _____ hybridized and those in ethylene (ethene) are _____ hybridized. The proton (H^+) is a Lewis acid because it can _____ a _____ of electrons. In Valence Bond Theory covalent bonds are formed by _____. The electronic configuration of carbon is _____

The ring strain of cyclopropane is due to both _____ strain and _____ strain.

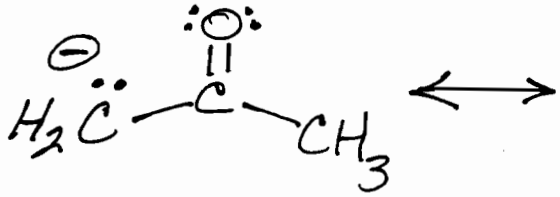
IV. (9 pts.) Provide the structures which correspond to each of the following names.

A. 4-isopropyl-2,2-dimethyloctane

B. 1-bromo-3-t-butylcyclopentane

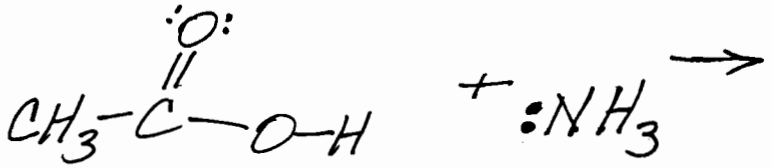
C. 4-bromo-1-t-butyl-2-methylcycloheptane

V. (9pts) Draw legitimate resonance structures for each of the following. Illustrate the e-pair flow with curved arrows.

A. 

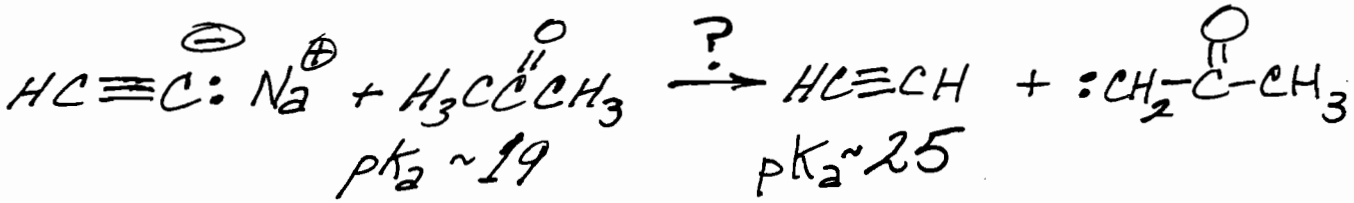
B. 

VII. (5 pts) Predict the products and show e-pair movement for this reaction.



VIII. (5 pts) Will the following reaction proceed in the direction shown?

Yes ☐ No ☐



VIII. (20pts) Provide an example of:

A) A molecule with a completely nonpolar covalent bond.

B) A hydrocarbon with only sp^3-hybridized carbons.

C) A Lewis acid that is not a Brønsted Lowrey acid.

D) A hydrocarbon with only sp-hybridized carbons.

E) A Lewis (e-dot) structure of H_3CCN showing all valence-shell electrons.

F) An ester

G) An aldehyde

H) Two molecules united by H-bonding

I. A 4-carbon molecule containing 3 sp^2 C's, 1 sp^3 C and 1 sp^2 oxygen.

J) the chair form of a cyclohexane locked in one conformation.

IX. (10 pts) A) Draw Newman projections of the most stable, least stable, and gauche conformations of butane sighting down the C_2-C_3 bond.

B. Draw the structure of the least stable conformer of cis-1,3-dichlorocyclohexane using a chair form and making the equatorial & axial bonding very clear.

X. (1 pt.) What force keeps gecko lizards from falling into sleeping little boys' faces when running across the ceiling at night?