

NAME: _____

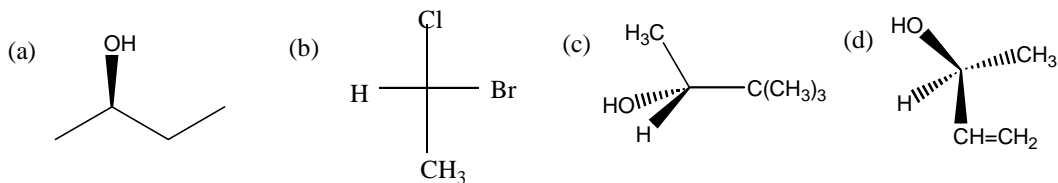
Chemistry 891G

Basic Quiz Material #2

27 September 2002

You must bring this problem set with answers written in your own hand (do not use computer software to generate pictures) to the teaching assistant. If you get 80% correct, you are finished with the assignment. If you get a lower grade, the teaching assistant will return the problem set to you with the indication that you are to try again. You must get 80% correct to move along to the next basic quiz, and you must finish *all* the basic quiz assignments at 80% correct level to get a total of 10% of the grade points for the organic section. This is an all or nothing set of assignments. You may discuss this assignment with anyone, but you must prepare the answer keys yourself, in your own hand. You are also responsible for knowing the material covered in this set of questions, and knowing it by heart.

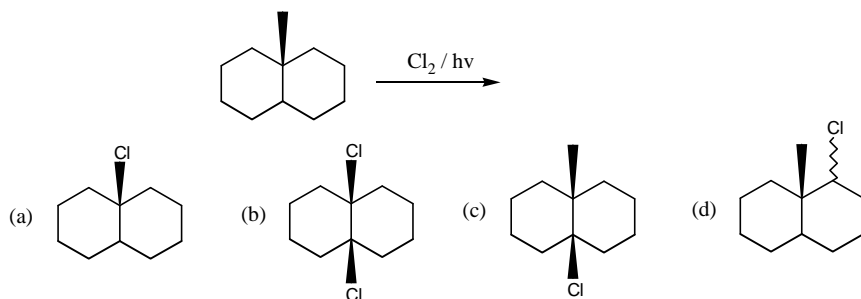
(1) Circle the compound below that has the (S)-configuration?



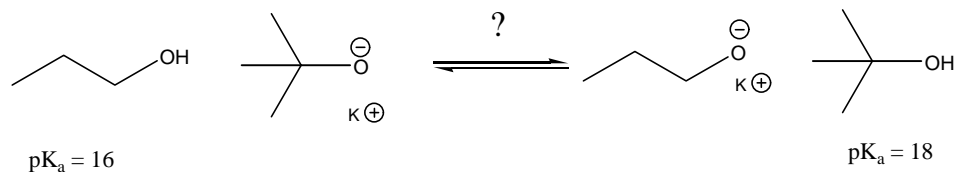
(2) Which one of the following do you expect to be most reactive with potassium metal?

- a. CH_3OH b. $\text{CH}_3\text{CH}(\text{CH}_3)\text{OH}$
 c. $(\text{CH}_3)_2\text{CHCH}(\text{CH}_3)\text{OH}$ d. $\text{CH}_3\text{CH}_2\text{CH}_2\text{C}(\text{CH}_3)_2\text{OH}$

(3) What product of the following reaction is likely to be formed in highest yield?



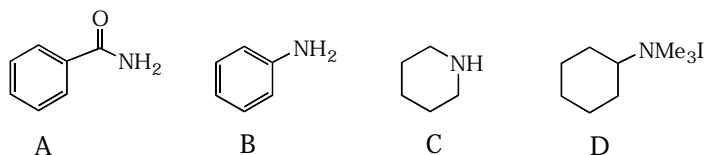
(4) Circle the statement below that best describes the equilibrium shown.



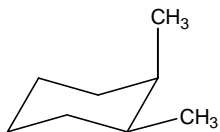
- (a) The equilibrium favors the products (b) The equilibrium favors the reactants
 (c) The equilibrium is balanced (d) These molecules cannot equilibrate

(5) Rank the following compounds in order of basicity.

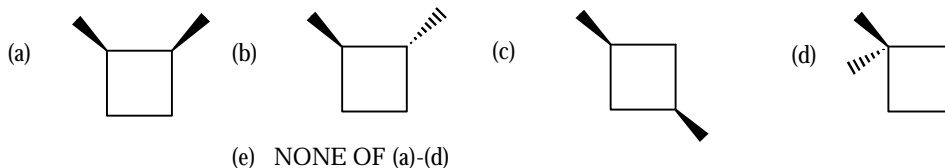
- (a) $A > B > C > D$ (b) $C > B > A > D$ (c) $B > C > A > D$ (d) $D > C > B > A$



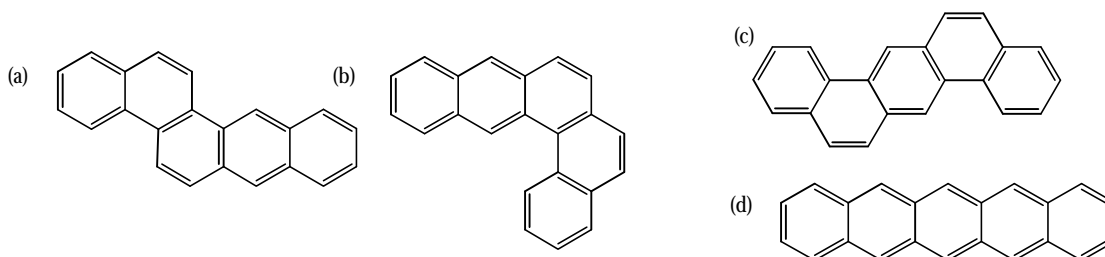
(6) *Cis*-1,2-dimethylcyclohexane (shown below) clearly does not have a mirror plane. Draw a mirror image picture of the “enantiomer” shown below, and *briefly* explain why this molecule does not show optical activity.



(7) Identify which (if any) of the molecules shown below is expected to have four different peaks in the ^{13}C -NMR proton decoupled spectrum.



(8) Which structure do you expect to exhibit the *highest relative aromatic stability* out of the systems shown below?



(9) Which molecule should have the *lowest* pK_a among those shown below?

(a) $\text{CH}_3\text{CH}_2\text{OH}$ (b) Ph-OH (c) $\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$ (d) $\text{CCl}_3\text{CH}_2\text{CO}_2\text{H}$ (e) $\text{CCl}_3\text{CO}_2\text{H}$

(10) Which *one* of the compounds shown below will be expected to have aromatic properties?

