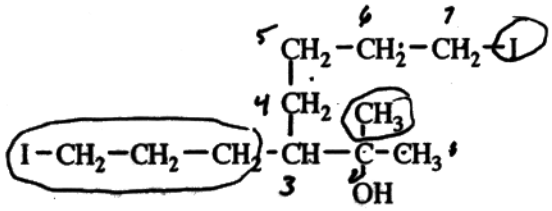
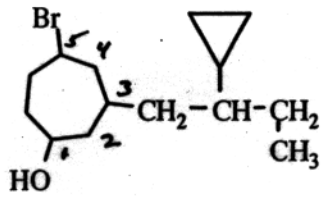
Ch 334 - Quiz 3 (take-home)
due 9:00:00 am, Wed. 10/30/02 Name (please print) KEY

(46 points) **(No part credit. Answers must be meticulously correct in every detail.)**

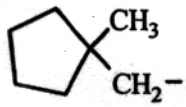
1. (20) Give an acceptable name for the following, taking care that all of the rules of naming (use of commas, dashes, etc.) are used correctly. Include stereochemical labels where appropriate.

a) 

b) 

a) 7-iodo-3-(3-iodopropyl)-2-methyl-2-heptanol

b) 5-bromo-3-(2-cyclopropylbutyl)cycloheptanol

c) 
(two ways)

1-Fluoromethyl-1-methylcyclopentane
(as an haloalkane)

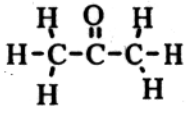
(1-methylcyclopentyl)methyl Fluoride
(as an alkyl halide)

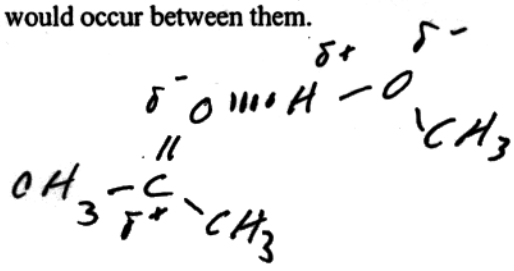
d) $CH_3-CH_2-\underset{\displaystyle CH_3}{\underset{|}{C}}H-O^{\ominus}\ K^{\oplus}$
(two ways)

potassium sec-butoxide (or 1-methylpropoxide)
(as an alkoxide)

potassium 2-butanolate
(as an alcoholate)

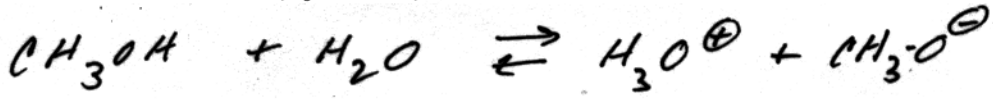
2. (4) Methyl alcohol is very soluble in acetone (below) because of an attractive interaction between these two molecules. Sketch the interaction that would occur between them.





3. The K_a of methyl alcohol has been measured to be 6.3×10^{-16}.

(a) (4) Give the chemical reaction (equilibrium) to which this measurement refers.

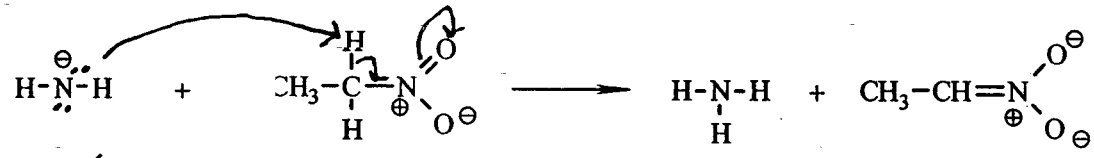


(b) (4) Define K_a for methyl alcohol.

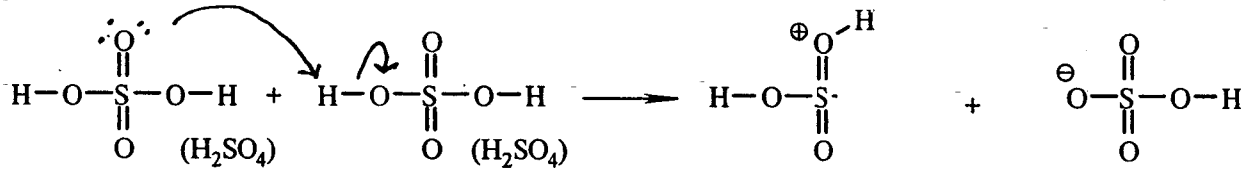
$$K_a = \boxed{\frac{[H_3O^+][CH_3O^-]}{[CH_3OH]}} = 6.3 \times 10^{-16}$$

4. a) (6) Considering the proton-transfer reactions below as written *from left to right*, label the Bronsted acid and the Bronsted base as well as the corresponding conjugates. (Be sure to label the conjugates adequately.)

b) (4) Also insert the electron-pushing arrows for the proton transfers as written from left to right.

a) 

B base B acid conjugate acid of NH_2^- conjugate base of $CH_3-CH_2-\ddot{N}-\ddot{O}^{\ominus}$

b) 

B base B acid conjugate acid of H_2SO_4 conjugate base of H_2SO_4

6. (4) a) The conjugate base of HSO_3^- is SO_3^{-2} and the conjugate acid is H_2SO_3.

b) The conjugate acid of O^{-2} is HO^-. The conjugate base of HO^- is O^{-2}.