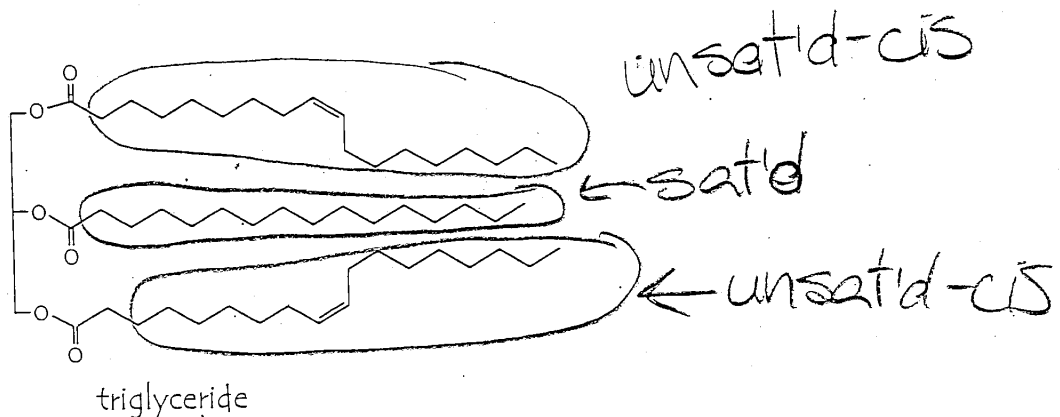


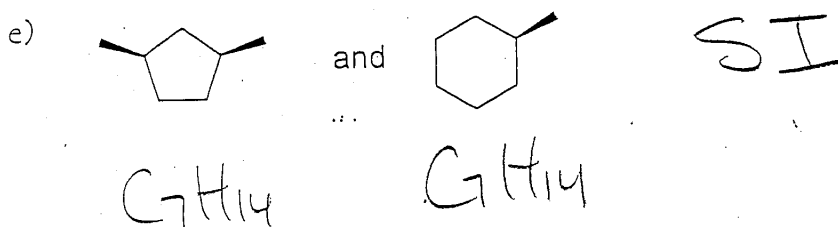
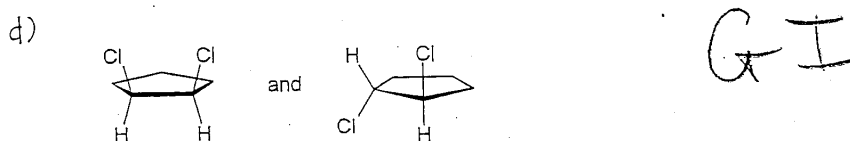
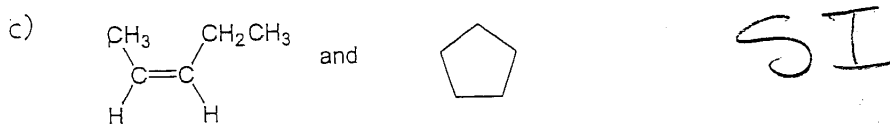
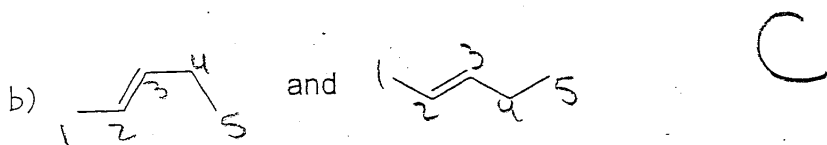
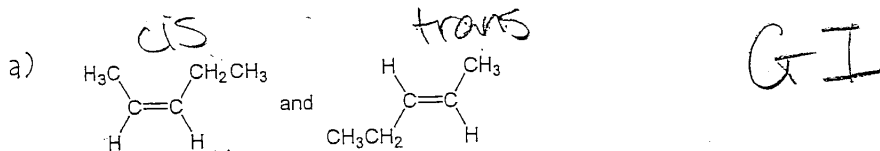
Quiz 4

(1 point of extra credit included)

1. The triglyceride below is also called a fat molecule. Circle the three hydrocarbon tails and classify them as saturated, unsaturated (cis), or unsaturated (trans). (2 pts)

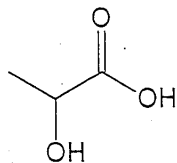


2. What is the BEST term to describe the relationship between the following pairs of compounds: I = identical; C = conformers; SI - structural (constitutional) isomers; GI geometric (cis/trans) isomers; CD = completely different compounds. (5 pts)

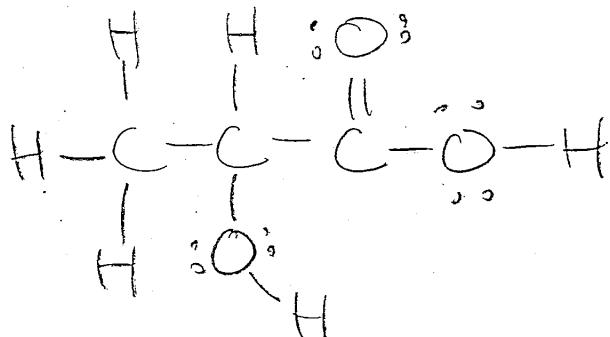


3. The skeletal-line structure for lactic acid is shown below.

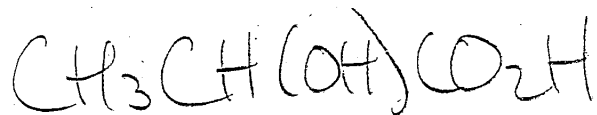
(4 pts)



a) Draw the Lewis structure. Remember to include the lone pair electrons.



b) Write the condensed structural formula.



c) Write the molecular formula.



d) What is the molar mass of lactic acid? Remember to include units.

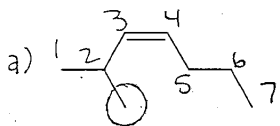
$$\begin{array}{rcl} 3(12.01) & \Rightarrow & 36.03 \\ 6(1.01) & \Rightarrow & 6.06 \\ + 3(16.00) & \Rightarrow & 48.00 \end{array}$$

$$\boxed{90.09 \text{ g/mol}}$$

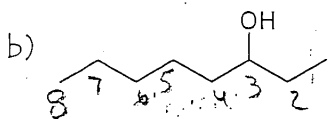
Quiz 5

There are 2 pts of extra credit on the front and 5 points of extra credit on the back.

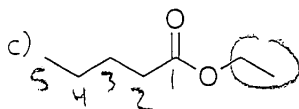
1. Give the IUPAC name for each compound below. Remember cis/trans if applicable. (6 pts)



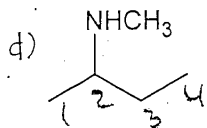
cis-2-methyl-3-heptene



3-octanol



ethyl pentanoate



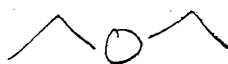
N-methyl-2-butanamine



3-ethylhexanal

2. Draw the skeletal-line structure for each of the following compounds.

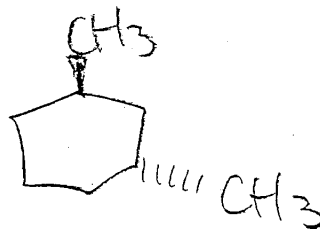
a) diethyl ether



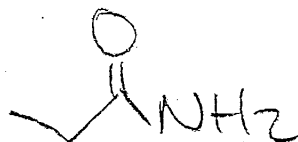
b) 2-pentanone



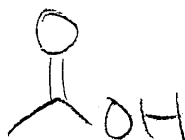
c) trans-1,3-dimethylcyclohexane



d) propanamide



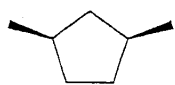
e) acetic acid (ethanoic acid)



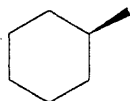
Extra "Extra Credit"

3. What is the BEST term to describe the relationship between the following pairs of compounds:
I = identical; C = conformers; SI - structural (constitutional) isomers; GI geometric (cis/trans) isomers; CD = completely different compounds. (5 pts)

a)



and



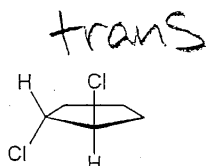
both
 C_7H_{14}

SI

b)



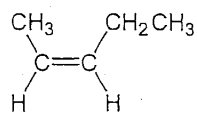
and



GI

both 1,2-dichlorocyclopentane

c)



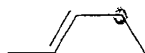
and



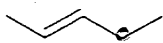
both
 C_5H_{10}

SI

d)



and

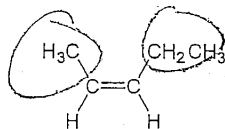


trans

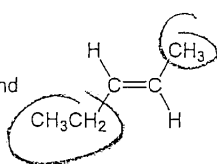
trans

C

e)



and



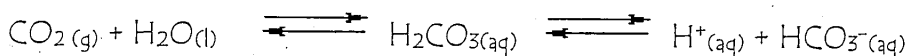
cis

trans

GI

both 2-pentene

1. Hyperventilation describes the condition where the breathing rate is increased. Use the reaction below to answer the following questions.



Would hyperventilation cause the blood pH to increase or decrease? Explain your answer using what you know about equilibrium and acid/base chemistry. (1 pt)

↑ breathing rate ↓ [CO₂] $\frac{\text{CO}_2}{\downarrow \Delta}$

$\leftarrow \Delta$ shifts equil. to the left \rightleftharpoons ↓ [H⁺] ↑ pH

2. Which system would you expect to be a better buffer system? Explain your reasoning. (1 pt)
- 0.1 M NaH₂PO₄ and 0.1 M NaOH
 - 0.1 M NaH₂PO₄ and 0.1 M HNO₃
 - 0.1 M NaH₂PO₄ and 0.1 M Na₂HPO₄

ⓐ weak acid & weak base @ similar concentrations

3. What are the concentrations and pH values of the three solutions prepared from 1:10 serial dilutions of 0.1M hydrochloric acid? Complete the table below to summarize your answers. (2 pts)

Solution	[H ₃ O ⁺]	pH
Original solution	0.1 M	1.0
1 st serial dilution	0.01 M	2.0
2 nd serial dilution	0.001 M	3.0

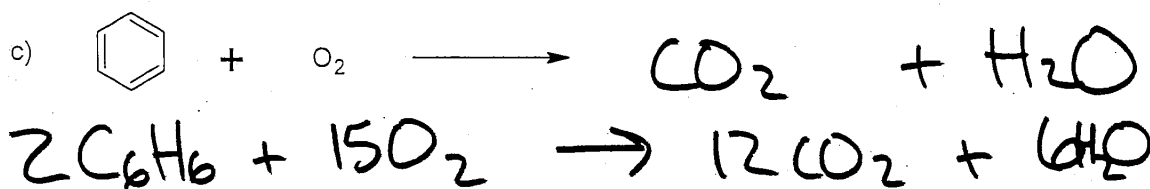
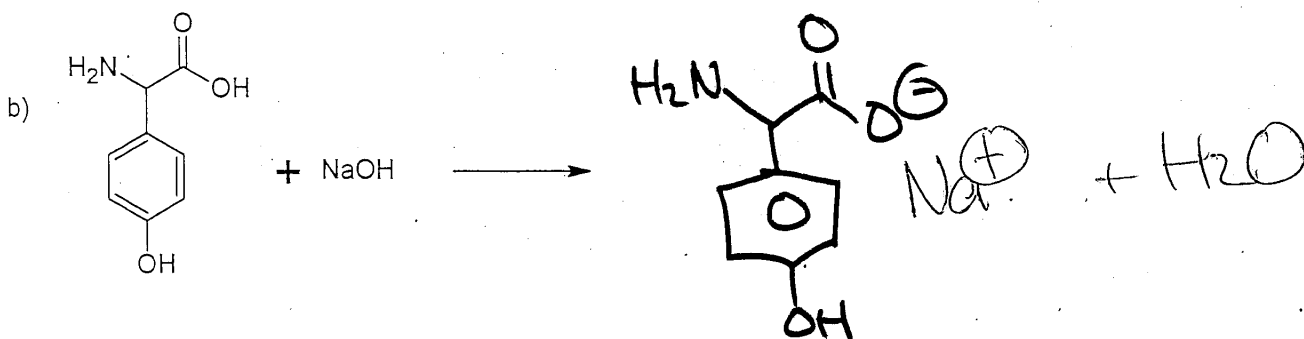
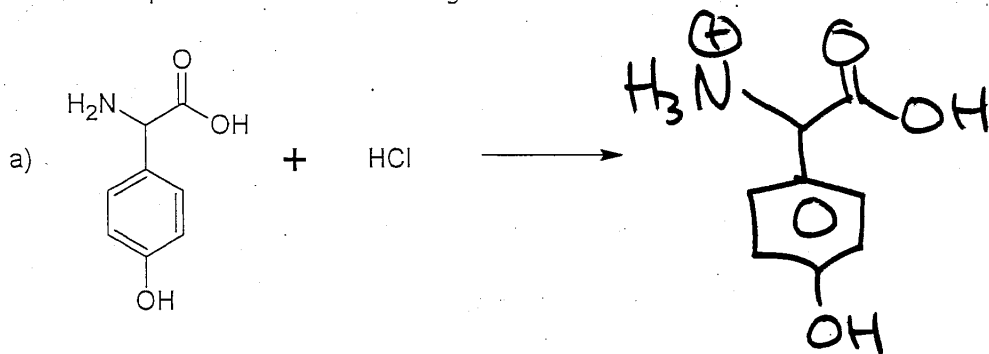
4. What is the hydroxide concentration of a sample with a pH of 4.0? (1 pt)

$$[\text{H}^+] = 10^{-4}$$

$$\therefore [\text{OH}^-] = 10^{-10} \text{ M}$$

5. Predict the products of the following reactions. For reaction (c), balance the reaction.

(4 pts)



6. For the reaction below, label each reactant as an "acid" or "base"; label each product as "conjugate base" or "conjugate acid"; and draw arrows to connect the conjugate acid-base pairs.

3pts

