Homework Chapter 21 Chem 2320

	Name	
1. Fill in the blanks of the following	statements.	
fatty	acids contain one carbon-car	bon double bond.
Fats are esters of glycerol and three		
diet.		_ are essential fatty acids needed in the
The process of	gets rid of C=C	"s and makes liquid fats into solid fats.
Partial hydrogenation can create detrimental to health.		which are unnatural and may be
Soap works by forming	in which the c	organic tails are on the inside and the
Some good sources of omega-3 fatt	y acids are	
2. Draw structures for the following	compounds.	
a) Trichloroacetic acid	b) 2-methylmalonic acid	c) 3-cyclopentylpentanedioic acid
d) <u>m</u> -chlorobenzoic acid	e) <u>Z</u> -3-hexenoic acid	f) 1-methylcyclopentanecarboxylic acid

3. Name the following compounds.







4. Give the pK_a of each of the following compounds <u>as acids</u> and rank them in order of <u>decreasing</u> acidity.



5. Circle any of the following compounds which can form hydrogen bonds with water. Then draw a square around any of the compounds which can form hydrogen bonds with itself.



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6. Determine the structures of the following compounds from their NMR spectra. Label the H's on your compound with the letters in the spectral data.

a) a - 1.6 ppm (3H, d) b - 3.7 ppm (1H, q) c - 7.4 ppm (5H, s) d - 11.8 ppm (1H, s)	$C_9H_{10}O_2$
b) a - 1.9 ppm (3H, s) b - 5.5 ppm (1H, d) c - 5.9 ppm (1H, d) d - 12.2 ppm (1H, s)	$C_4H_6O_2$
c) a - 4.5 ppm (2H, s) b - 6.8 ppm (3H, m) c - 7.2 ppm (2H, d) d - 12.0 ppm (1H, s)	C ₈ H ₈ O ₃

7. If you are given a mixture containing benzyl alcohol, phenol, and benzoic acid, dissolved in ether:

a) What will happen if you then extract the mixture with 5% aqueous potassium carbonate, then neutralize the extract with acid and extract it with ether?

b) What will happen if you then extract the mixture with 5% aqueous sodium hydroxide, then neutralize the extract with acid and extract it with ether?

c) What will be left in the original solution?

8. Fill in the missing reagents and products.





9. Give the products of the following reactions.



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10. Which of the following reactions will give the desired isotopically labeled compound? Hint: consider the mechanism of both reactions. Explain your choice!



11. Show the step-by-step mechanism for the following reactions. Account for all electron pairs, charges, etc.









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12. Show a reaction sequence (reagents and products) that will accomplish the following transformations. Reactions from previous chapters will be used.

