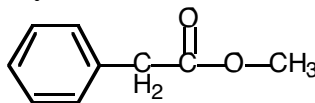





Drill sheet for exam 3

Exam will be similar in format to Exam 2 and will only cover chapter 17. The questions you see here are representative of the type of question and level of material on the exam. There will be two extra credit problems on the exam that will require more application of what you have learned in this chapter. You are also encouraged to review the assigned homework problems and try some non-assigned problems if you need more practice.

1. The saponification of the carboxylic ester shown below yields the following products:



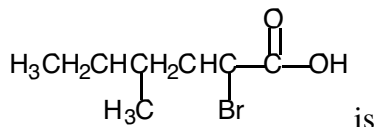
- a.   $\text{CH}_2\text{CHO}_2\text{H}$        $\text{CH}_3\text{OH}$
- b.  $\text{H}_3\text{CCO}_2\text{H}$       
- c.   $\text{CH}_2\text{O}_2^-$        $\text{CH}_3\text{OH}$
- d. none of the above

2. Carboxylate ion can exist only in water at:

- a. pH 7      c. high pH  
b. low pH      d.  $[\text{H}^+]$  greater than  $10^{-2}\text{M}$

3. The name of the compound,  $\text{H}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{C}(=\text{O})\text{OCH}_2\text{CH}_2(\text{CH}_3)_2$  is

- a. isobutyl pentanoate      c. pentyl isobutyrate  
b. butyl propionate      d. isobutyl butyrate



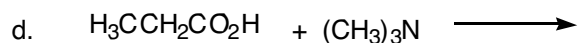
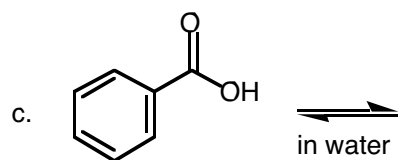
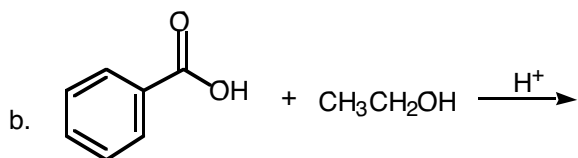
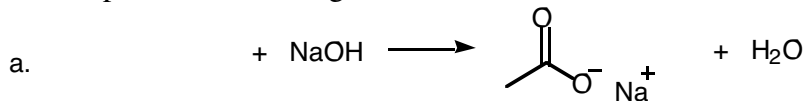
4. The name of the compound, is

- a. 1-bromo-3-methylhexanoic acid  
b. 2-bromo-4-methylhexanoic acid  
c. 2-bromo-4-methylpentanoic acid  
d. 5-bromo-3-methylpentanoic acid

5. The hydrolysis of what ester produces butanoic acid and phenol.

- a. phenyl butanoate      c. butyl benzoate  
b. benzyl propionate      d. phenyl propionate

6. Complete the following reactions



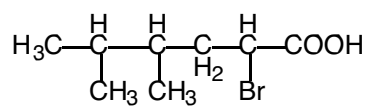
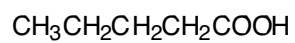
7. The structure of the dimer formed by hydrogen bonding between 2 carboxylic acid molecules,  $\text{RCO}_2\text{H}$  is:

8. The order of increasing boiling points for an alkane, a carboxylic acid, and ester and an alcohol, all of comparable molecular weight is:

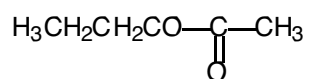
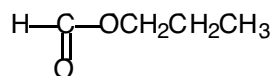
9. The primary reason for the order in question 8 is

10. The molecular formula for octyl acetate is  $\text{H}_3\text{C}-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}(\text{CH}_2)_7\text{CH}_3$ . The molecule gives the fragrance of an orange. Draw the structure of the alcohol and the acid from which the ester was made.

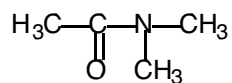
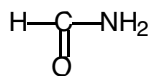
## 11. Nomenclature



2-bromobutanoic acid



isopropyl pentanoate



*N*-methylpropanamide