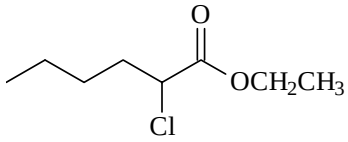
Chemistry 211 Name _____
Chapter 20 Quiz #2

1. What is the name of the following compound?

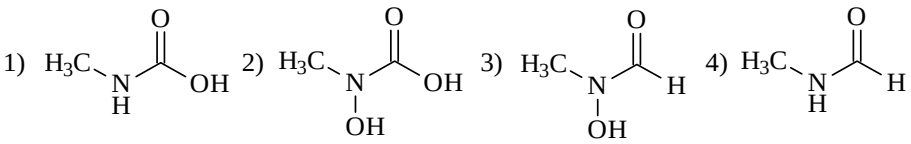


1) 2-chlorohexyl ethanoate 2) 1-chlorohexyl ethanoate
3) ethyl 2-chlorohexanoate 4) ethyl 1-chlorohexanoate

2. Which of the following would work best in preparing *tert*-butyl benzoate?

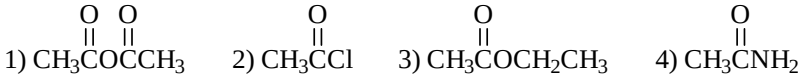
1) $C_6H_5CO_2H$ plus $(CH_3)_3COH$ with H_2SO_4 catalyst and heat
2) $C_6H_5CO_2Na$ plus $(CH_3)_3CBr$ and heat
3) $C_6H_5CONH_2$ plus $(CH_3)_3COH$ and heat
4) $C_6H_5CO_2H$ plus $SOCl_2$ followed by $(CH_3)_3COH$ with pyridine

3. Which of the following is the product of the addition of water to methyl isocyanate, $CH_3N{=}C{=}O$?



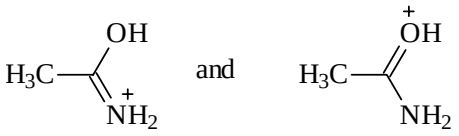
1) 1 2) 2 3) 3 4) 4

4. Which of the following has the fastest rate of hydrolysis to give acetic acid?



1) 1 2) 2 3) 3 4) 4

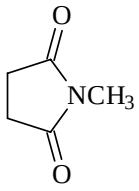
5. What is the relationship between the following two structures?

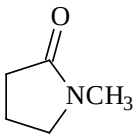


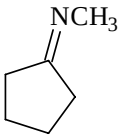
1) resonance forms 2) stereoisomers
3) constitutional isomers 4) tautomers

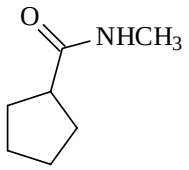
Chemistry 211 Name _____
Chapter 20 Quiz #2

6. Each of the following gives methylammonium chloride, $CH_3NH_3^+ Cl^-$, when hydrolyzed in aqueous acid solution except one. Which one?

1) 

2) 

3) 

4) 

1) 1 2) 2 3) 3 4) 4

7. Rank the following in order of decreasing rate of hydrolysis.

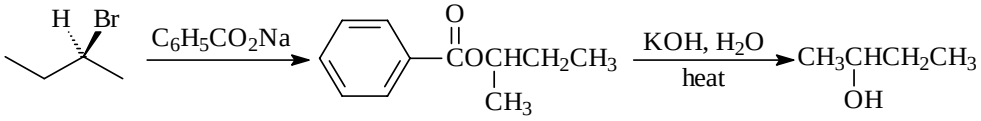
A. acetyl chloride
B. acetic anhydride
C. ethyl acetate
D. acetamide

1) A>B>C>D 2) D>C>B>A 3) A>C>B>D 4) B>C>D>A

8. Which one of the following does <u>not</u> react with benzoyl chloride, C_6H_5COCl?

1) NH_3 2) CH_3NH_2 3) $(CH_3)_2NH$ 4) $(CH_3)_3N$

9. Identify the stereochemistries of *sec*-butyl benzoate and 2-butanol in the following reaction sequence? (Assume that the reaction sequence shown follows the customary mechanisms for bimolecular nucleophilic substitution and nucleophilic acyl substitution.)



sec-butyl benzoate 2-butanol

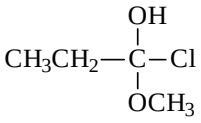
	<u>*sec*-butyl benzoate</u>	<u>2-butanol</u>
1)	R	S
2)	R	R
3)	S	R
4)	S	racemic
5)	racemic	racemic

Chemistry 211 Name _____
Chapter 20 Quiz #2

10. How are reactions between aldehydes and nucleophiles fundamentally different than reactions between acyl chlorides and nucleophiles?

1) Aldehydes are readily oxidized by nucleophiles to carboxylic acids.
2) Acyl chlorides have a leaving group, Cl^-, whereas aldehydes do not.
3) Aldehydes do not form tetrahedral intermediates with nucleophiles.
4) Acyl chlorides readily form enol tautomers.

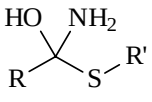
11. The following tetrahedral intermediate breaks down to:

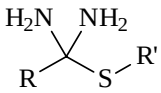


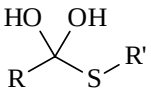
1) propanoyl chloride and CH_3OH
2) propanoic acid and CH_3Cl
3) propanal and HCl
4) methyl propanoate and HCl

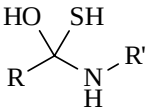
12. Which of the following is the tetrahedral intermediate formed in the reaction of a thioester with ammonia?

thioester

1) 

2) 

3) 

4) 

1) 1 2) 2 3) 3 4) 4